QST

devoted entirely to

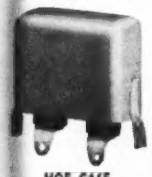
amateur radio

July, 1951
40 Cents
45c in Canada

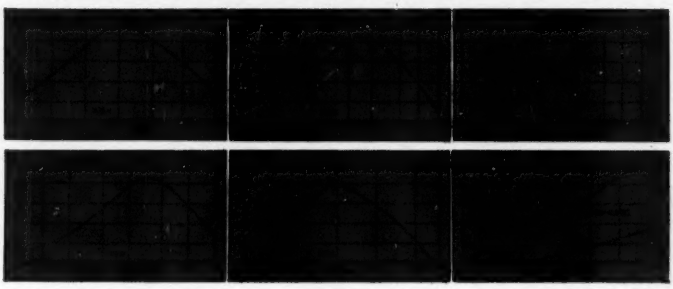
The UTC type HQ permalloy dust toroids are ideal for all audio, carrier and supersonic applications. HQA coils have Q over 100 at 5,000 cycles... HQB coils, Q over 200 at 4,000 cycles... HQC coils, Q over 200 at 30 KC... HQD coils, Q over 200 at 60 KC... HQE (miniature) coils, Q over 120 at 10 KC. The toroid dust core provides very low hum pickup... excellent stability with voltage change... negligible inductance change with temperature, etc. Precision adjusted to 1% tolerance. Hermetically sealed.

HQA, HQC, HQD CASE
1 13/16" Dia. x 1 3/16" High

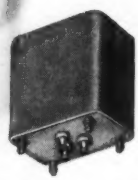
HQB CASE
1 5/8" x 2 5/8" x 2 1/2" High



HQE CASE
1/2" x 1 5/16" x 1 3/16" High



Type No.	Inductance Value		Net Price	Type No.	Inductance Value		Net Price	Type No.	Inductance Value		Net Price
HQA-1	5	mhy.	$7.00	HQA-16	7.5	hy.	$15.00	HQC-1	1	mhy.	$13.00
HQA-2	12.5	mhy.	7.00	HQA-17	10.	hy.	16.00	HQC-2	2.5	mhy.	13.00
HQA-3	20	mhy.	7.50	HQA-18	15.	hy.	17.00	HQC-3	5	mhy.	13.00
HQA-4	30	mhy.	7.50	HQB-1	10	mhy.	16.00	HQC-4	10	mhy.	13.00
HQA-5	50	mhy.	8.00	HQB-2	30	mhy.	16.00	HQC-5	20	mhy.	13.00
HQA-6	80	mhy.	8.00	HQB-3	70	mhy.	16.00	HQD-1	.4	mhy.	15.00
HQA-7	125	mhy.	9.00	HQB-4	120	mhy.	17.00	HQD-2	1	mhy.	15.00
HQA-8	200	mhy.	9.00	HQB-5	.5	hy.	17.00	HQD-3	2.5	mhy.	15.00
HQA-9	300	mhy.	10.00	HQB-6	1.	hy.	18.00	HQD-4	5	mhy.	15.00
HQA-10	.5	hy.	10.00	HQB-7	2.	hy.	19.00	HQD-5	15	mhy.	15.00
HQA-11	.75	hy.	10.00	HQB-8	3.5	hy.	20.00	HQE-1	5	mhy.	6.00
HQA-12	1.25	hy.	11.00	HQB-9	7.5	hy.	21.00	HQE-2	10	mhy.	6.00
HQA-13	2.	hy.	11.00	HQB-10	12.	hy.	22.00	HQE-3	50	mhy.	7.00
HQA-14	3.	hy.	13.00	HQB-11	18.	hy.	23.00	HQE-4	100	mhy.	7.50
HQA-15	5.	hy.	14.00	HQB-12	25.	hy.	24.00	HQE-5	200	mhy.	8.00



FILTER CASE M
1 3/16 x 1 11/16,
1 5/8 x 2 1/2 High

These U.T.C. stock units take care of most common filter applications. The interstage filters, BMI (band pass), HMI (high pass), and LMI (low pass), have a nominal impedance at 10,000 ohms. The line filters, BML (band pass), HML (high pass), and LML (low pass), are intended for use in 500/600 ohm circuits. All units are shielded for low pickup (150 mv/gauss) and are hermetically sealed.

STOCK FREQUENCIES
(Number after letters is frequency)
Net Price $25.00

BMI-60	BMI-1500	LMI-200	BML-400
BMI-100	BMI-3000	LMI-500	BML-1000
BMI-120	BMI-10000	LMI-1000	HML-200
BMI-400	HMI-200	LMI-2000	HML-500
BMI-500	HMI-500	LMI-3000	LML-1000
BMI-750	HMI-1000	LMI-5000	LML-2500
BMI-1000	HMI-3000	LMI-10000	LML-4000
			LML-12000

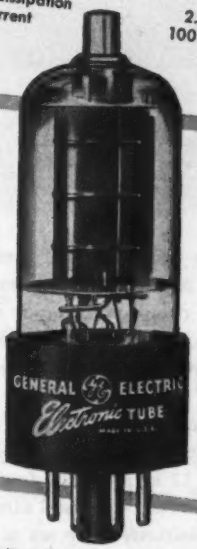
150 VARICK STREET • NEW YORK 13, N. Y.
EXPORT DIVISION 13 EAST 40th STREET, NEW YORK 16, N. Y. CABLES "ARLAB"

YOUR STAUNCH COMRADE

on 24-hour civil-defense tricks

6BQ6-GT
BEAM POWER AMPLIFIER
MAX RATINGS (Design Center)

D-c plate supply voltage	550 v
D-c screen voltage	200 v
Plate dissipation	11 w
Screen dissipation	2.5 w
Plate current	100 ma



When you're part of a communications chain during an emergency, you need tube stamina that will match your own—the ability to "take it" for hours on end. Types like General Electric's 6BQ6-GT are your answer!

Better-built . . . better-tested . . . and *more efficient!* Because of its high perveance, the 6BQ6-GT develops a substantial plate current (100 ma) with low plate and screen voltages, giving you the ideal all-around tube for small transmitters.

In fact, the 6BQ6-GT will operate at close to full input with plate voltages as low as 100 v. This means that for portable or emergency rigs, a couple of 45-v batteries or an auto-radio power supply will work the tube satisfactorily.

Get complete facts from your G-E tube distributor! Learn the economy price of the efficient, reliable 6BQ6-GT . . . also the low prices of other finely-made G-E tubes, teaming up to offer you premium dependability plus premium value! *General Electric Co., Electronics Department, Schenectady 5, N. Y.*

● **The "why"** of 6BQ6-GT dependability, as with other G-E types, is the "how" of the tube's many tests during and after production. Resources like General Electric's can provide the costly, intricate apparatus these searching tests require. Examples of G-E factory test equipment: (1) a capacitance-measuring bridge that will read down to 1/100,000 of a micro-micro-farad. . . . (2) a resistance bridge (for measuring leakage resistance) that will record up to a half-trillion ohms!

ELECTRONIC TUBES OF ALL TYPES FOR THE RADIO AMATEUR

GENERAL ELECTRIC

184-KA7

Unrivaled on both c-w and phone

The Collins 75A-2 amateur receiver is not a phone man's dream and a c-w man's compromise. Nor vice-versa. It is specifically, separately engineered to give surpassing service to each.

As shipped from the factory, for instance, the selectivity of the 75A-2 is adjusted to 4 kc at 6 db down and about 12 kc at 60 db down (selectivity knob at zero — crystal filter out). With the selectivity knob set at 4, the bandwidth is approximately 200 cycles at 6 db down and 6.5 kc at 60 db down. An excellent balance for intelligibility on phone and sharpness on c-w.

But if a dyed-in-the-wool c-w operator wants still more selectivity, it is a simple matter (explained in the instruction book) to adjust to 2.5 kc at 6 db down and 10.5 kc at 60 db down, with the crystal filter out.

The 75A-2 has a separate front panel controlled c-w noise limiter, designed to accomplish this one purpose in the best way it can be done. It consists of a shunt type circuit, following the first audio amplifier, which acts on both positive and negative portions of the audio cycle and positively cuts off all interfering noises at any level desired. This limiter noticeably decreases nerve fatigue and enables the operator to copy c-w signals which would not be readable without it.

The 75A-2's highly stable BFO injection is designed for optimum reduction of heterodynes between incoming signals.

For the best in amateur radio, it's . . .

COLLINS

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 West 42nd Street, NEW YORK 18 **2700 West Olive Avenue, BURBANK**

QST

JULY 1951

VOLUME XXXV • NUMBER 7

PUBLISHED, MONTHLY, AS ITS OFFICIAL ORGAN, BY THE AMERICAN RADIO RELAY LEAGUE, INC., AT WEST HARTFORD, CONN., U. S. A.; OFFICIAL ORGAN OF THE INTERNATIONAL AMATEUR RADIO UNION

OFFICES

38 La Salle Road
West Hartford 7, Connecticut

TEL.: 3-6268 TWX: HF 88

Subscription rate in United States and Possessions, $4.00 per year, postpaid; $4.25 in the Dominion of Canada, $5.00 in all other countries. Single copies, 40 cents. Foreign remittances should be by international postal or express money order or bank draft negotiable in the U. S. and for an equivalent amount in U. S. funds.

Entered as second-class matter May 29, 1919, at the post office at Hartford, Connecticut, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1102, Act of October 3, 1917, authorized September 9, 1922. Additional entry at Concord, N. H., authorized February 21, 1929, under the Act of February 28, 1925.

INDEXED BY
INDUSTRIAL ARTS INDEX

—CONTENTS—

On top for SELECTIVITY!

500 CYCLES AT
6 DB WITH ROUNDED
TOP; SHARPEST SELECTIVITY
POSITION

3 KC at 60 DB

hallicrafters

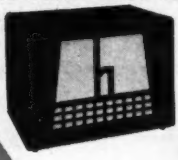
NEW S-76 . . . $169.50

50 kc 2nd I-F GIVES MORE OF WHAT YOU WANT THAN ANY OTHER SET ON THE MARKET REGARDLESS OF ITS PRICE CLASS

New running mate to the already famous SX-71 double conversion receiver. More useable selectivity than the best crystal.

GIANT 4-IN "S" METER calibrated in microvolts and "S" units. Four bands 538–1580 kc, 1720 kc to 32 Mc. Calibrated electrical bandspread, 5 position selectivity, average sensitivity 2 microvolts with ½ watt output. 9 tubes plus regulator, rectifier . . .

R-46 SPEAKER—New 10" PM in matching satin black cabinet with 500-ohm transformer **$19.95**



hallicrafters

"The Radio Man's Radio"

WORLD'S LEADING MANUFACTURERS OF PRECISION RADIO & TELEVISION • CHICAGO 24, ILLINOIS

NOVICES

WELCOME TO THE RANKS OF AMERICAN AMATEURS!

July marks the entry of a new class of licensee into the amateur fold . . . the Novice. We welcome the Novice as one who takes the first uncertain step into the fascinating world of amateur radio . . . with its rich background of comradeship, loyalty, public service and searching experimentation. The transmitter of the Novice operator must have accurate frequency control . . . crystal control with its complete dependability. May we suggest that — from the start — you depend on PR's for frequency. They will never let you down . . . as old-timers have found out since 1934.

ONLY THE BEST IS GOOD ENOUGH

The frequency stability of your signal is only as good as the crystal that controls it . . . an impelling reason why you can place your faith in PR . . . the standard of excellence in crystal control. Get PRs at your Jobber.

PR Crystals

Since 1934

USE PR AND KNOW WHERE YOU ARE

PETERSEN RADIO COMPANY, INC.
2800 W. BROADWAY • COUNCIL BLUFFS, IOWA

EXPORT SALES ONLY: *Royal National Company, Inc., 75 West Street, New York 6, N. Y., U. S. A.*

Section Communications Managers of the ARRL Communications Department

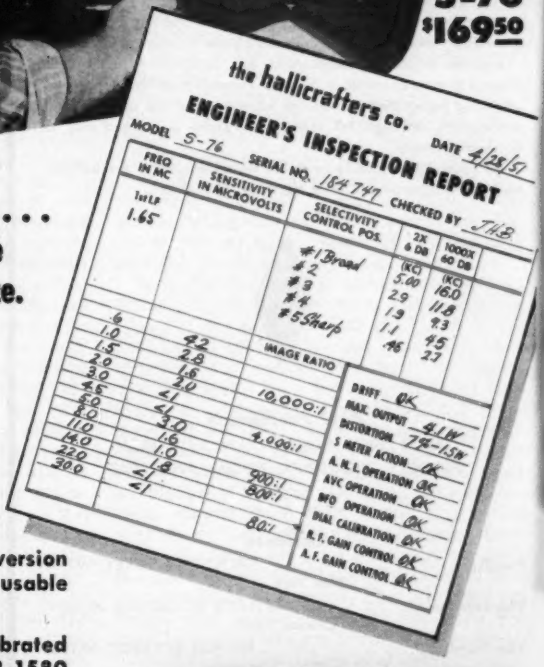
Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio Club reports are also desired by SCMs for inclusion in *QST*. **All ARRL Field Organization appointments** are now available to League members. These include ORS, OES, OPS, OO and OBS. Also, where vacancies exist SCMs desire applications for SEC, EC, RM, and PAM. In addition to station and leadership appointments for Members, *all amateurs* in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).

ATLANTIC DIVISION				
Eastern Pennsylvania	W3BES	Jerry Mathis	617 Crescent Ave.	Glenside
Maryland-Delaware-D.C.	W3OMN	James W. John	29 Fawcett St.	Kensington, Md.
Southern New Jersey	W2ASG	Dr. Luther M. Mkitarian	500 Warwick Road	Haddonfield
Western New York	W2PGT	Harding A. Clark	RFD 2	Manlius
Western Pennsylvania	W3KWL	Ernest J. Hlinsky	509 Beechwood Ave.	Farrell
CENTRAL DIVISION				
Illinois	W9EVJ	Lloyd E. Hopkins	27 Lynch St.	Elgin
Indiana	W9RE	W. E. Monigan	1504 East Ewing	South Bend 14
Wisconsin	W9RQM	Reno W. Goetach	929 S. 7th Ave.	Wausau
DAKOTA DIVISION				
North Dakota	WØJWV	Rev. Lawrence C. Strandenaes	St. Andrew's Church	Westhope
South Dakota*	WØRRN	J. W. Sikorski	1900 South Menlo Ave.	Sioux Falls
Minnesota	WØMXC	Charles M. Bove	1611½ E. Lake St.	Minneapolis 7
DELTA DIVISION				
Arkansas	W5DRW	Dr. John L. Stockton	P. O. Box 302	Siloam Springs
Louisiana	W5GHF	Robert E. Barr	Box 446	Springhill
Mississippi	W5JHS	Norman B. Feehan	P. O. Box 491	Gulfport
Tennessee	W4AFI	D. G. Stewart	McAlice Drive	Fountain City
GREAT LAKES DIVISION				
Kentucky	W4KKG	I. W. Lyle, jr.	R. R. 3	Jeffersontown
Michigan	W8DLZ	Norman C. MacPhail	1340 Giddings, S.E.	Grand Rapids
Ohio	W8HGW	Leslie Misch	21380 Mastick Rd.	Cleveland 26
HUDSON DIVISION				
Eastern New York	W2CLL	George W. Sleeper	76 Fuller Road	Albany 3
N. Y. C. & Long Island	W2OBU	George V. Cooke	88-31 239th St.	Bellerose 6, L. I.
Northern New Jersey	W2NKD	Thomas J. Ryan, jr.	1082 Anna St.	Elizabeth 4
MIDWEST DIVISION				
Iowa	WØPP	William G. Davis	3rd St.	Mitchellville
Kansas	WØICV	Earl N. Johnston	624 Roosevelt	Topeka
Missouri	WØGBJ	Clarence L. Arundale	1048 South Jefferson Ave.	Springfield 4
Nebraska	WØOED	Scott E. Davison	433 North Nye Ave.	Fremont
NEW ENGLAND DIVISION				
Connecticut	W1VB	Walter L. Glover	Glover Ave.	Newtown
Maine	W1PTL	Orestes R. Brackett	Goodrich St.	Bingham
Eastern Massachusetts	W1ALP	Frank L. Baker, jr.	91 Atlantic St.	North Quincy 71
Western Massachusetts	W1EOB	Victor W. Paounoff	26 Denton Circle	Springfield
New Hampshire	W1JNC	Norman A. Chapman	98 South St.	Concord
Rhode Island	W1CJH	Roy B. Fuller	17 Ledge Road	East Greenwich
Vermont	W1NLO	Burtis W. Dean	P. O. Box 81	Burlington
NORTHWESTERN DIVISION				
Alaska	KL7IG	Charles M. Gray	Box 1237	Douglas
Idaho	W7IWU	Alan K. Ross	2105 Irene St.	Boise
Montana	W7KGJ	Edward G. Brown	421 Yellowstone Ave.	Billings
Oregon	W7MQ	J. E. Roden	519 N.W. Ninth	Pendleton
Washington	W7CZV	Laurence Sebring	Route 2, Box 384	Everett
PACIFIC DIVISION				
Hawaii	KH6RU	John R. Sanders	c/o Mackay Radio & Telegraph Co. Inc., Box 2993	Honolulu
Nevada	W7BVZ	Carroll W. Short, jr.	1608 Arizona St.	Boulder City
Santa Clara Valley	W6LZL	Roy I. Couzin	7 Englewood Ave.	Los Gatos
East Bay	W6TI	Horace R. Greer	414 Fairmount Ave.	Oakland 11
San Francisco	W6ATO	R. F. Czeikowitz	243 Colon Ave.	San Francisco 12
Sacramento Valley*	W6CKV	Willie van de Kamp	RFD 1, Box 492A	Chico
San Joaquin Valley	W6FYM	E. Howard Hale	741 E. Main St.	Turlock
ROANOKE DIVISION				
North Carolina	W4DCQ	Herman P. Jolitz	P. O. Box 48	Clinton
South Carolina	W4AZT	Wade H. Holland	P. O. Box 116	Greenville
Virginia	W4FF	H. Edgar Lindauer	Route 1, Box 431	Annandale
West Virginia	W8JM	Donald B. Morris	303 Home St.	Fairmont
ROCKY MOUNTAIN DIVISION				
Colorado	WØIQZ	M. W. Mitchell	1959 Uinta St.	Denver 7
Utah	W7SP	Leonard F. Zimmerman	House 4	Saltair
Wyoming	W7HNI	A. D. Gaddis	P. O. Box 786	Gillette
SOUTHEASTERN DIVISION				
Alabama	W4LEN	Lewis C. Garrett	818 Maplewood Ave.	Anniston
Eastern Florida	W4FWZ	John W. Hollister	3809 Springfield Blvd.	Jacksonville
Western Florida*	W4MS	Edward J. Collins	1003 E. Blount St.	Pensacola
Georgia	W4ZD	James P. Born, jr.	25 First Ave., N.E.	Atlanta
West Indies (Cuba-P.R.-V.I.)	KP4DJ	William Werner	563 Ramon Llovet	Urb. Truman, Rio Piedras, P. R.
Canal Zone	KZ5AW	Everett R. Kimmel	Box 264	Gamboa, C. Z.
SOUTHWESTERN DIVISION				
Los Angeles	W6ESR	Samuel A. Greenlee	1701 Sepulveda Blvd.	Manhattan Beach
Arizona	W7MID	Jim Kennedy	4511 N. 8th St.	Phoenix
San Diego	W6YYM	Mrs. Ellen White	3677 Wightman St.	San Diego
WEST GULF DIVISION				
Northern Texas	W5BKH	William A. Green	1834 University Blvd.	Abilene
Oklahoma	W5AHT/AST	Frank E. Fisher	104 East 11th St.	Pawhuska
Southern Texas	W5FJF	Dr. Charles Fermaglich	618 Medical Arts Bldg.	Houston 2
New Mexico*	W5BIW	Richard J. Matthias	P. O. Box 548	State College
MARITIME DIVISION				
Maritime (Nfld. & Labr. att.)	VE1DQ	A. M. Crowell	69 Dublin St.	Halifax, N. S.
ONTARIO DIVISION				
Ontario	VE3IA	G. Eric Farquhar	16 Emerald Crescent	Burlington, Ont.
QUEBEC DIVISION				
Quebec	VE2GL	Gordon A. Lynn	R.R. No. 1	Ste. Genevieve de Pierrefonds, P. Q.
VANALTA DIVISION				
Alberta	VE6MJ	Sydney T. Jones	P. O. Box 373	Edmonton, Alta.
British Columbia	VE7FB	Ernest Savage	4553 West 12th Ave.	Vancouver
Yukon				
PRAIRIE DIVISION				
Manitoba	VE4AM	A. W. Morley	26 Lennox Ave.	St. Vital
Saskatchewan	VE5HR	Harold R. Horn	1044 King St.	Saskatoon

* Officials appointed to act temporarily in the absence of a regular official.

hallicrafters

S-76
$169.50



the hallicrafters co.

ENGINEER'S INSPECTION REPORT

MODEL S-76 SERIAL NO. 184747 DATE 4/28/51 CHECKED BY JHB

FREQ IN MC	SENSITIVITY IN MICROVOLTS	SELECTIVITY CONTROL POS.	2X 6 DB	1000X 60 DB
1st I.F. 1.65		#1 Broad	(KC) 5.00	(KC) 16.0
		#2	2.9	11.8
		#3	1.9	9.3
		#4	1.1	4.5
		#5 Sharp	.46	2.7
6				
10	4.2			
15	2.8			
20	1.6			
30	2.0			
45	<1			
60	<1			
80	3.0			
110	1.6			
140	1.0			
220	1.8			
300	<1			
	<1			

IMAGE RATIO

10,000:1

4,000:1

500:1

800:1

80:1

DRIFT OK
MAX. OUTPUT 4.1 W
DISTORTION 7%-1.5 W
S METER ACTION OK
A. N. L. OPERATION OK
AVC OPERATION OK
BFO OPERATION OK
DIAL CALIBRATION OK
R. F. GAIN CONTROL OK
A. F. GAIN CONTROL OK

MORE of what you want . . . than any other set on the market, regardless of price.

500-cycle selectivity at 6 db down—3 kc selectivity at 60 db down—with selectivity control in sharpest of five positions.

2 microvolt average sensitivity with ½ watt output. 9 tubes plus regulator, rectifier.

50 kc 2nd IF (after double conversion with 1st IF 1650 kc) gives more usable selectivity than the best crystal.

Giant 4-in. "S" meter. Calibrated electrical bandspread. Range 538-1580 kc, 1.72-32 Mc in 4 bands.

All MARS Frequencies—the only Dual Conversion Receiver covering all Military Amateur Radio System Frequencies.

hallicrafters
"The Radio Man's Radio"

WORLD'S LEADING MANUFACTURER OF PRECISION RADIO AND TELEVISION • CHICAGO 24, ILLINOIS

THE AMERICAN RADIO RELAY LEAGUE, *INC.*,

is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

All general correspondence should be addressed to the administrative headquarters at West Hartford, Connecticut.

Past Presidents

HIRAM PERCY MAXIM, W1AW, 1914–1936
EUGENE C. WOODRUFF, W8CMP, 1936–1940

• • • • •

Officers

President . . . . . GEORGE W. BAILEY, W2KH
New York, N. Y.

Vice-President . . . . . WAYLAND M. GROVES, W5NW
Odessa, Texas

Vice-President . . . . . FRANCIS E. HANDY, W1BDI
West Hartford, Connecticut

Secretary . . . . . A. L. BUDLONG, W1BUD
West Hartford, Connecticut

Treasurer . . . . . DAVID H. HOUGHTON
West Hartford, Connecticut

• • • • •

General Counsel . . . . . PAUL M. SEGAL
816 Connecticut Ave., Washington 6, D. C.

Assistant Secretaries . . . . . JOHN HUNTOON, W1LVQ
RICHARD L. BALDWIN, W1IKE HARRY PASTON, W1DJV
West Hartford, Connecticut

DIRECTORS

Canadian General Manager

ALEX REID VE2BE
240 Logan Ave., St. Lambert, P. Q.
Vice-Director: William W. Butchart VE6LQ
10740 107 St., Edmonton, Alta.

Atlantic Division

WALTER BRADLEY MARTIN W3QV
1033 Arbuta Rd., Abington, Pa.
Vice-Director: Henry W. Wickenhiser, jr. . W3KWA
1112 State Ave., Coraopolis, Pa.

Central Division

WESLEY E. MARRINER W9AND
844 N. Galena Ave., Dixon 7, Ill.
Vice-Director: Charles F. Reberg W9MVZ
3900 W. 10th Ave., Gary, Ind.

Dakota Division

GOODWIN L. DOSLAND . . . . . WØTSN
Moorhead, Minn.
Vice-Director: Alfred M. Gowan . . . . . WØPHR
325 S. Menlo Ave., Sioux Falls, S. D.

Delta Division

VICTOR CANFIELD W5BSR
P. O. Box 965, Lake Charles, La.
Vice-Director: George S. Acton W5BMM
Plain Dealing, La.

Great Lakes Division

JOHN H. BRABB W8SPF
417 Ford Bldg., Detroit 26, Mich.
Vice-Director: Harold E. Stricker W8WZ
247 W. 5th St., Marysville, Ohio

Hudson Division

JOSEPH M. JOHNSTON W2SOX
423 Monmouth Ave., Bradley Beach, N. J.
Vice-Director: George V. Cooke, jr. W2OBU
88-31 239th St., Bellerose 6, L. I., N. Y.

Midwest Division

LEONARD COLLETT . . . . . WØDEA
Box 88, c/o C.A.A., Agana, Guam, M. I.
Address correspondence to the Acting Director:
ALVIN G. KEYES . . . . . WØKTQ
1201 Merchants Nat'l Bank Bldg., Cedar Rapids, Ia

New England Division

PERCY C. NOBLE W1BVR
37 Broad St., Westfield, Mass.
Vice-Director: Frank L. Baker, jr. W1ALP
91 Atlantic St., North Quincy 71, Mass.

Northwestern Division

R. REX ROBERTS W7CPY
837 Park Hill Drive, Billings, Mont.
Vice-Director: Karl W. Weingarten W7BG
3219 N. 24th St., Tacoma 7, Wash.

Pacific Division

KENNETH E. HUGHES W6CIS
810 W. Orange Ave., So. San Francisco, Calif.
Vice-Director: C. Porter Evans W6BF
134 Dracena Ave., Piedmont 11, Calif.

Roanoke Division

WILLIAM H. JACOBS W4CVQ
Route 6, Raleigh, N. C.
Vice-Director: Gus M. Browning W4BPD
135 Broughton St., S. E., Orangeburg, S. C.

Rocky Mountain Division

FRANKLIN K. MATEJKA . . . . . WØDD
P. O. Box 212, Estes Park, Colo.
Vice-Director: Ramon S. Walker . . . . . WØOWP
P. O. Box X, Brush, Colo.

Southeastern Division

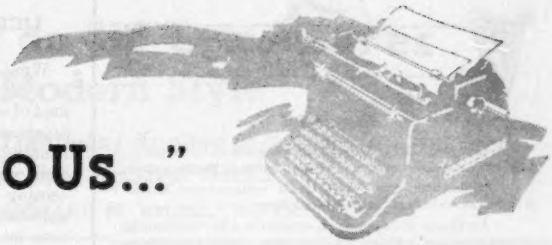
LAMAR HILL W4BOL
104 Myrtle, Cochran, Ga.
Vice-Director: William P. Sides W4AUP
Fleming Road, Montgomery, Ala.

Southwestern Division

JOHN R. GRIGGS W6KW
10412 Don Pico Rd., RFD 2, Spring Valley, Calif.
Vice-Director: Walter R. Joos W6EKM
1315 N. Overhill Drive, Inglewood 3, Calif.

West Gulf Division

A. DAVID MIDDELTON W5CA
9 Kay Road, Tijera, N. M.
Vice-Director: Frank E. Fisher W5AHT/AST
104 E. 11th, Pawhuska, Okla.



"It Seems to Us..."

WELCOME, NOVICE!

On July 1st there goes into effect for the benefit of you, the newcomer, and for the first time in amateur history, an arrangement drastically revising downward the minimum requirements for entrance into the scientific hobby of amateur radio. To the extent that there has been any change in entrance requirements in past years, the tendency has been to increase the standards (example: upping the code from 10 to 13 words per minute some years ago). The purpose of this apparent reversal in thinking is to attract more persons like you to the field of amateur radio on a one-year apprenticeship during which you can develop your interests and skills to a point where you can meet the *present* standards and become "full-fledged" hams.

And so, Mr. Prospective Novice, the Commission and the League and the individual League members are all going to have a particular interest in you. We hope that if previously you've been discouraged in the progress of your code practice with oscillator or buzzer, you'll get up at least to the 5-w.p.m. requirement of the Novice license, pass your exam, and continue building up your operating and technical skills in actual on-the-air practice — a scheme of learning while doing. We're going to be watching that progress, and we're going to do everything possible to speed your advancement and to see that the bug bites you so thoroughly that you won't rest a minute until you've gone after the regular ticket.

One of our biggest contributions toward that end is the revision of W1AW's code-practice schedule to include plenty of sessions at the lower speeds useful to the person just starting out. In fact, the 5-w.p.m. speed is directly comparable to what you'll get in the Novice exam. And there are speeds of 7½ and 10 to furnish additional practice, since it's always well to have a little margin in your ability before actually going up for the exam. See "Operating News" in this issue for the complete W1AW code practice dope.

But that isn't all. You'll find, too, an increasing amount of material in *QST* more directly useful to you as a beginner. The magazine's primary responsibility is of course to our amateur members, a philosophy with which you'll surely agree when you become one of the fraternity. Meanwhile, you must expect the average *QST* technical article to be a bit over your head — just as it was well above ours when we started. But you don't make any progress unless you tackle something that appears over your head at the start — so don't turn the pages too quickly just because something looks a little rough on first inspection. In any event, we'll have suitable material each month right up your alley — simple transmitters such as that described in our last two issues, simple receivers such as those now in the works in our lab and to be described in forthcoming issues, and such additional things as basic workshop practice articles similar to the story in this issue on mechanical design and layout.

Now, we hope you have clear sailing, but if you run into trouble and just can't get something to behave properly, don't forget the ARRL Technical Information Service. Write us concerning any individual technical problem you may have, and chances are that we can put our finger right on the difficulty. And sing out if you have any licensing or regulatory problem. We're here to help all we can.

If you're like most of the rest of us, your primary object in ham radio is communication. Nothing can compare with the thrill of the first QSO, with equipment you have constructed or assembled with your own hands. You'll probably be a bit shaky the first time (yes, we were, too), but you'll find out where the other fellow is located, and how good your signal is coming in at his shack, and maybe you'll make a schedule to talk with him again a subsequent evening. The bug will bite, but good. Maybe you'll want to put up a better antenna, or the present one in a different direction, or redesign the rig to see if you can get a few more watts "soup" out of it (no more than 75 watts input of course!). This combined operating and technical interest will bring you quickly to the point where you'll be ready for a crack at a regular five-year ticket.

One thing you don't want to overlook is joining a local radio club if there's one in your vicinity. We hams are a pretty fraternal bunch, as you probably know or have guessed, and there are over 600 clubs affiliated with the League. You'll find members more than willing to give you a hand to help you along.

Yes, OM, come on in — you'll find the water fine.

July 1926

. . . Technical Editor Robert S. Kruse and L. G. Windom, 8GZ-8ZG, discuss methods of feeding transmitting antennas.

. . . Dime-store glass toothbrush holders are recommended as spreaders for Zepp feed lines.

. . . Amateurs are serving as operators and maintaining communications watches for the many Arctic expeditions now in the headlines.

. . . UV-202s and UV-204As are seeing service on five meters as amateurs investigate this new band.

. . . A wealth of practical information is presented in L. W. Hatry's review of regenerative receiver circuits.

. . . L. G. Windom, 8GZ-8ZG, has won the Jewell prize contest for low-power work. Using a 199 tube with 0.567-watt input, Mr. Windom communicated with Australian 5BG for a record of 17,820 miles per watt.

. . . Arthur H. Lynch, formerly editor of *Radio Broadcast*, is now engaged in the manufacture of resistors.

. . . The construction of commercial and ham-built crystal holders is reviewed by Assistant Technical Editor John M. Clayton.

. . . Eppa W. Darne, 3BWT, has set a record for consistency, not having missed being on the air nightly for a period of five years.

MILITARY MANEUVERS REQUIRE AMATEUR COÖPERATION

To protect low-power military communications operations in 3700–3900 kc. in connection with maneuvers centering in the Carolinas, amateurs are requested to observe the following conditions during the period August 6th to September 7th:

1. For amateurs in North Carolina, South Carolina, Georgia, Delaware, Maryland, Virginia, West Virginia and the District of Columbia, and in Tennessee east of and including Hamilton, Rhea, Roane, Anderson and Campbell counties: No operation in the band of frequencies 3700–3900 kc. during the period of the maneuvers.
2. For amateurs outside the area defined in (1) above and east of the Mississippi River:
   (a) No special limitations during daylight hours
   (b) No nighttime operation (local sunset to local sunrise) in the band of frequencies 3700–3900 kc. during the period of the maneuvers.
3. For amateurs west of the Mississippi River or outside the continental United States: no special limitations.

The League urges all amateurs in the affected areas to comply strictly with the above request, as a matter of voluntary coöperation.

LICENSE RENEWALS—DON'T WRITE FCC

What with personnel shortages, delay in securing official forms, and the heavy load of renewal applications in 1951, FCC's amateur licensing branch is swamped and running badly behind for the first time in some years. If you write or wire FCC concerning the whereabouts of your license application, an employee has to spend time looking up the matter and answering you — time which could better be spent in working on the backlog. The plea from FCC is: don't write us — please be patient — we're turning out the work as rapidly as we can.

Because of this problem, there have been some instances in which processing of an amateur application for renewal has been delayed beyond expiration date, ordinarily meaning that the licensee has to cease operation. However, FCC has just ruled that if you have applied for renewal *before expiration date* but do not have a response from FCC by expiration date, you may continue your regular amateur operation until you do hear from the Commission concerning your application. This applies only to applications for renewal; if your application has additional aspects such as modification for change of address, etc., they are not included; FCC says only that you may continue operating under the privileges specified in the license being renewed.

One moral to this is to get your renewal applications in to FCC at the earliest permissible date — 120 days before expiration. Check your ticket now!

144-MC. RECORD BROKEN!!

California-Texas Two-Way Work in June V.H.F. Party

All previous records for two-way work on 144 Mc. were shattered by a wide margin on June 10th. The 2-meter band was open across Southwestern U. S. A. for about two hours, beginning around 5 P.M. PST. W6WSQ, Pasadena, W6ZL, Glendale, and W2PJA/6, Lakewood, California, worked W5AJG, Dallas, and W5QNL, Texarkana, Texas, distances of 1200 to 1400 miles. This is the first 2-meter DX to be worked from California.

On the basis of last-minute information it is not possible to determine what propagation medium was responsible, but presence of high-density sporadic-*E* ionization over most of the country indicates that this is how the achievement came about. Extremely mountainous intervening terrain would seem to rule out tropospheric propagation.

Details in August *QST*.

Building an 813 Transmitter—Modern Style

Simplified TVI Treatment Applied to a 350-Watt Rig for Five Amateur Bands

BY RICHARD M. SMITH,* W1FTX

• The 813 continues to be one of the more popular tubes with those who are looking for a rig in the 250- to 350-watt class. Here's a constructional article that shows how such a transmitter can be built and operated in harmony with TV.

CONTRARY to the belief of many, TVI elimination and power reduction do not necessarily go hand in hand. In fact, many have found, to their disappointment, that power reduction alone seldom is of any benefit. If the basic fundamentals of TVI elimination have been overlooked in the design of a transmitter, it doesn't matter much whether it uses an 807 or a much bigger tube in the final amplifier; interference usually will result in TV localities.

These days, to be TVI-free, a transmitter need not be complex. It is true that many of the rigs described since TV service started have been complicated by the addition of harmonic traps, the use of inductive coupling between all stages, and other harmonic-reducing measures. In spite of their complexity, many of these rigs have used nothing more impressive than an 807 or two in the final amplifier. However, there is no longer reason to assume that low power and complexity are the price every ham must pay to keep peace with TV-viewing neighbors. The basic principles of TVI elimination are effective at much higher power levels than many seem to think, and the measures can be quite simple. The transmitter described here was built to illustrate both of these points. In a majority of cases you need not go QRP, and you need not have a complicated rig, to lick TVI.

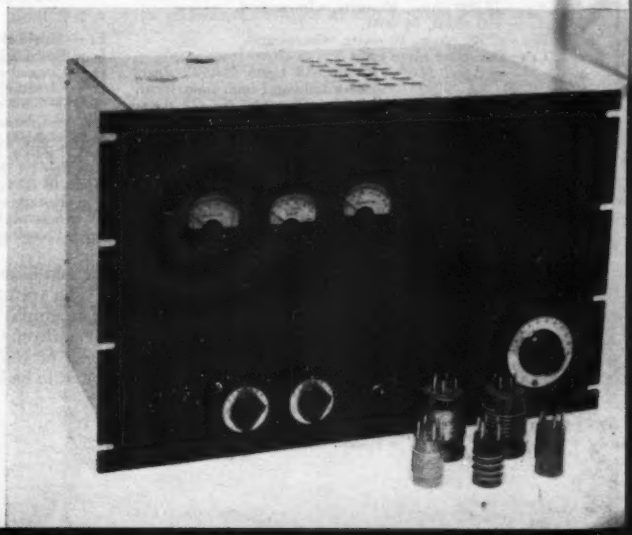
Design Considerations

The complexity that characterizes the design of many earlier TVI-treated rigs is a natural result of the all-out efforts put forth by designers to reduce harmonic output to a bare minimum. In the course of events we found what we now consider to be the fundamentals of TVI elimination, and we also investigated a number of refinements of lesser importance. They have all been covered adequately in the pages of *QST* in recent months, and need not be rehashed here.

The time has come when we can start to simplify things, concentrating on those points found most important and discarding things of lesser worth. The most important principle in TVI elimination is that of keeping the harmonics under your thumb, where they can be controlled. This calls for good shielding. Without it, you can never be sure of the prime source of your troubles, and your efforts to cure them are scattered through hit-or-miss channels. With good shielding and power-lead filtering, however, you can be sure that the only way harmonics can get from your rig to the TV set is through your antenna system. Then, and only then, can a low-pass filter do its job of keeping the harmonics from getting to the antenna.

There are, of course, other considerations, but confining the harmonics within a shield en-

* Technical Assistant, *QST*.



A 350-watt transmitter is behind this view of the 12¼-inch front panel, with adequate shielding and filtering to keep TVI within bounds. The controls, left to right, are the crystal-selector switch, the oscillator tuning condenser, the driver tuning condenser, excitation control, and amplifier-plate tuning condenser. The small knob above the large tuning condenser is for adjustment of the output link.

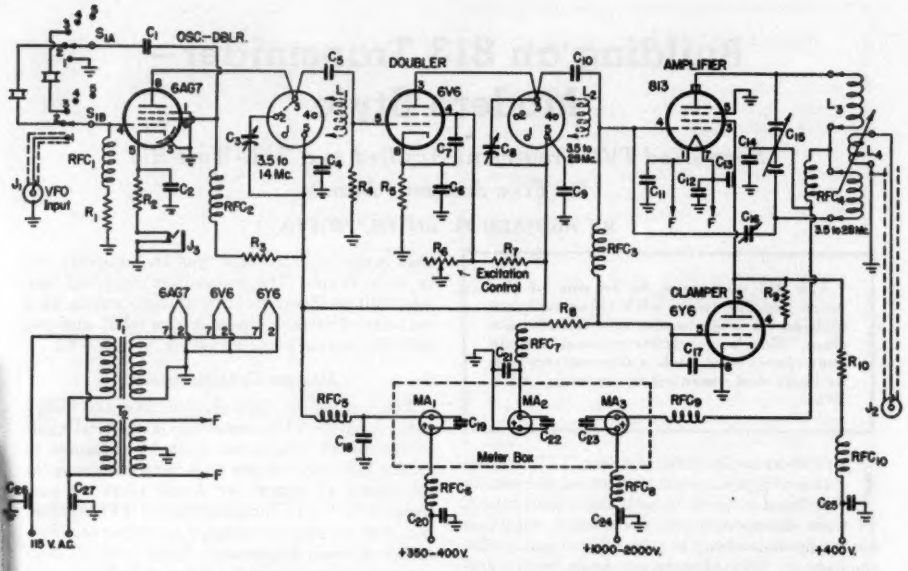


Fig. 1 — Schematic diagram of the transmitter. Socket connections for plug-in coils L_1 and L_2 are shown. For connections to the coil pins, see Fig. 2.

C_1, C_{18}, C_{26}, C_{31}, C_{35} — 0.005-μfd. disc ceramic.
C_2, C_6, C_{19}, C_{22}, C_{23} — 0.01-μfd. disc ceramic.
C_3 — 200-μμfd. receiving variable (Millen 19200).
C_4, C_7, C_9, C_{11}, C_{12}, C_{17} — 0.001-μfd. disc ceramic.
C_5 — 100-μμfd. mica, 500 volts d.c. working.
C_8 — 100-μμfd. receiving variable (Millen 19100).
C_{10} — 100-μμfd. mica, 1000 volts d.c. working.
C_{13} — 0.001 μfd., 1000 volts (Sprague "Hypass").
C_{14} — 0.001-μfd. mica, 5000 volts d.c. working (Aerovox 1654).
C_{15} — 100-μμfd.-per-section variable, 3000 volts peak (National TMC-100-D).
C_{16} — Neutralizing condenser; see text.
C_{24} — 0.001 μfd., 5000 volts d.c. (Sprague "Hypass").
C_{26}, C_{27} — 0.1 μfd., 250 volts a.c. (Sprague "Hypass").
R_1 — 15,000 ohms, ½ watt.
R_2 — 330 ohms, 1 watt.
R_3 — 33,000 ohms, 1 watt.
R_4 — 47,000 ohms, 1 watt.
R_5 — 500 ohms, 2 watts.
R_6 — 75,000-ohm wire-wound potentiometer, 7 watts.
R_7 — 25,000 ohms, 10 watts, wire-wound.
R_8 — 10,000 ohms, 10 watts, wire-wound.
R_9 — 100 ohms, ½ watt.
R_{10} — 2500 ohms, 10 watts, wire-wound.
L_1 — Oscillator plate coil:
— 3.5–7 Mc. — 10 μh.; 28 turns No. 22 d.s.c. close-wound on 1-inch diam. form.
— 7–14 Mc. — 2.3 μh.; 10 turns No. 22 d.s.c. spaced to occupy ⅜ inch on 1-inch diam. form.
— Untuned — 750 μh.; 33-ma. r.f. choke (National R-33) mounted inside coil form as shown in Fig. 2).
Forms for above coils are Millen 45005.
L_2 — Doubler plate coil:
— 3.5 Mc. — 17 μh.; 23 turns No. 18 d.s.c. close-wound on 1½-inch diam. form.
— 7 Mc. — 5.2 μh.: 12 turns No. 18 d.s.c. spaced to occupy 1 inch on 1½-inch diam. form.
— 14 Mc. — 1.8 μh.; 7 turns No. 18 d.s.c. spaced to occupy 1 inch on 1½-inch diam.
— 28 Mc. — 0.5 μh.; 4 turns No. 18 d.s.c. spaced to occupy 1 inch on 1-inch diam.
Forms for above coils are National XR-5, except 28-Mc. which coil uses Millen 45005.
L_3 — Amplifier plate coil:
(All are B & W TVL series. Winding data, except inductance, given below are for each *half* of coil.)
— 3.5 Mc. — 80 TVL, 43 μh.; 20 turns No. 16, 2½-inch diam., 2 inches long.
— 7 Mc. — 40 TVL, 15 μh.; 11 turns No. 12, 2½-inch diam., 2 inches long.
— 14 Mc. — 20 TVL; one turn removed from each side, 4.2 μh.; 4 turns No. 12, 2½-inch diam., 1⅝ inches long.
— 28 Mc. — 10 TVL; one turn removed from each side, 1 μh.; 2 turns No. 6, 2⅜-inch diam., 1¾ inches long.
L_4 — Shielded link, 3 turns (B & W 3583).
J_1 — Coaxial input jack (Jones S-101-D).
J_2 — Coaxial output jack (Amphenol 83-1R).
J_3 — Closed-circuit jack.
MA_1 — 0-100 ma. d.c.
MA_2 — 0-50 ma. d.c.
MA_3 — 0-500 ma. d.c.
RFC_1, RFC_2, RFC_3 — 2.5-mh. 100-ma. r.f. choke.
RFC_4 — 1.4 mh., 500 ma. (Millen 34140).
RFC_5 to RFC_{10} — 0.7-μh. choke (Ohmite Z-50).
S_1 — Rotary wafer switch, 2 poles, 5 positions, ceramic.
T_1 — 6.3-volt filament transformer, 3 amp. (UTC S-55).
T_2 — 10-volt transformer, 5 amp. (Thordarson T21F18).

closure and then filtering the output of the transmitter are the main points. If, in the course of building and operating the transmitter, you can minimize the generation of harmonics in the TV range,[1,2] so much the better, but you can't get away from the need for adequate shielding and filtering.

The transmitter shown in the accompanying photographs and diagrams places heavy emphasis on both of these points and ignores completely some of the lesser refinements that have been found to be helpful, but essential only in extreme

cases. The result is a rig that circuitwise will look familiar to the constructor of the pre-TV era, yet can be operated in harmony with both your neighbors' TV set and your own.

The Circuit

The 813 was selected for the final amplifier because it combines the required power-handling capabilities with low grid-drive requirements and high output capacitance, a desirable situation where TVI is a consideration. Working backward from the 813, a 6V6 was chosen as the driver tube. Of more importance here than the tube type is the circuit arrangement. A potentiometer connected as shown in Fig. 1 is used to obtain close control of the amount of power delivered to the grid of the final amplifier. Nothing is gained by overdriving a tube like the 813 and, in fact, much can be lost, because once a certain level is reached, increased grid drive results only in marked increase in harmonic output without corresponding increase at the fundamental.[3] The 6V6 is operated as a doubler except when the transmitter is used in the 3.5-Mc. band, where it operates straight through.

The 6V6 is driven by a 6AG7 crystal oscillator in a circuit arrangement that has proved both popular and effective. It permits either 3.5- or 7-Mc. crystals to be used, and its plate circuit can be tuned to either the crystal fundamental or its second harmonic. In addition, one position of the crystal selector switch is used to convert the stage from an oscillator to a doubler so that it can be used to couple a low-level VFO [4] to the transmitter.

One or two other circuit features are worthy of mention. The need for fixed bias for the 813 is eliminated by the use of a 6Y6G in a screen-clamping circuit. The arrangement, as shown in Fig. 1, differs from the usual one in which the screen voltage is supplied through a dropping resistor from the plate supply. Instead, a fixed screen supply is used, and the clamper tube operates through a small resistance to reduce screen voltage when excitation is removed from the 813 grid. This arrangement cannot be used with some other beam tetrodes such as the 4-65A and the 4-250A, because of their screen-grid characteristics, but with the 813 it is a practical power-conserving measure.

Capacity coupling is used between all stages of this transmitter. Admittedly, this is not as effective as inductive coupling in reducing harmonic transfer, but in this transmitter the oscillator and driver stages operate at low power levels, and whatever harmonics do sneak through are of no consequence if the shielding and filtering are good. The resulting reduction in the number of tuned circuits and operating controls seems worth the risk in this case.

Plug-in coils are used in all stages to minimize both cost and complexity. To avoid oscillation in the 6V6 stage when the transmitter is operated in the 3.5-Mc. band, an r.f. choke (instead of the usual coil) is plugged into the plate circuit of the 6AG7 stage. This dodge has been used successfully in many rigs. It is accomplished here by the circuit connections shown in Fig. 2.

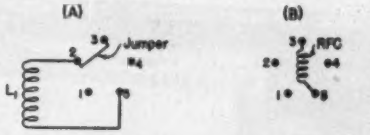
The coils used in the plate circuit of the oscillator stage are made so that each covers two adjacent bands. The lower-frequency band of the two is tuned with C_3 near maximum capacity, and the higher-frequency band near minimum.

Harmonic filters are inserted in each supply lead to eliminate radiation from the power wiring, and the transfer of harmonics to the antenna by capacity coupling is minimized by use of a shielded swinging-link assembly in the final amplifier. Add to the above a *complete* shielding job, and the net result is a transmitter which, when used with a low-pass filter and an antenna coupler, will cause little or no interference with TV reception under most circumstances.

Construction

The general construction of the transmitter is shown in the photographs. A standard 10 × 12 × 3-inch steel chassis is used with a 12¼ × 19-inch aluminum rack panel. In the interest of getting good shielding, all paint should be removed from both the panel and the chassis where they touch. Sandpapering after application of paint remover will leave the surfaces bright and clean.

As shown in the rear and bottom views of the transmitter, the chassis is not centered behind the panel, but is mounted so that (when viewed from the rear) the panel extends one inch beyond the right-hand edge of the chassis and six inches beyond the left-hand edge. This reduces the over-all height of the transmitter, making it possible to mount the tank circuit of the final amplifier in "outboard" fashion from one end of the chassis. The condenser is supported by four 1¼-inch ceramic stand-off insulators (National GS-5). Two of these rest on the end of the chassis, as shown in the bottom view, and



Bottom View of Coil Form

Fig. 2 — Connections for L_1, the oscillator plate coil. The arrangement used for operation in all except the 3.5-Mc. band is shown at A. The jumper, which is soldered inside the coil form, connects the coil to tuning condenser C_3. In B, used only for 3.5-Mc. operation, the jumper is omitted, which disconnects the tuning condenser from the circuit, and an r.f. choke is substituted as an untuned plate impedance to keep the 6V6 stage stable when operating straight through.

[1] Grammer, "By-passing for Harmonic Reduction," *QST*, April, 1951.

[2] Rand, "Don't Pamper Your Harmonics," *QST*, Feb., 1951.

[3] This point is brought home quite forcibly if it is possible to view both a TV set and an output meter while adjusting the potentiometer.

[4] The VFO used is described on p. 204 of the 1951 edition of *The Radio Amateur's Handbook*.

the other two are bolted to an aluminum bracket 1½ inches high, mounted at the end of the chassis.

The jack bar for the plug-in coils used in the final amplifier is mounted by means of small angle brackets on two of the insulators that support the tuning condenser. Part of one of these brackets is visible in the rear view of the transmitter.

The 813 tube is mounted horizontally at one end of the chassis. Its socket is supported by a 3¼-inch-square bracket bolted to the chassis 1¾ inches from the rear edge. The paint should be scraped off where the bracket and the chassis touch. Mounting the tube in this position results in a short r.f. lead from the plate cap of the tube to the tank circuit, permits plate, screen, and filament returns to be made to a common ground (the bracket), and allows room behind the socket for the homemade neutralizing condenser, C_{16}, and other parts.

Placement of these parts at the rear of the socket is shown in the rear-view photograph.[5] The tubular condenser mounted horizontally across a portion of the socket is C_{13}, the "Hypass" unit used as screen by-pass. The mounting clamp is unsoldered from the condenser so that its case can be soldered directly to Terminals 1 and 2 of the tube socket. Terminal 1 is one side of the filament, and Terminal 2, which has no circuit connection, is used merely for mechanical support. One of the axial leads of the condenser is then connected to Terminal 3, the screen grid, and the other goes to the screen-supply lead. Note that this arrangement returns the screen-grid by-pass to one side of the filament instead of to chassis ground.

Filament by-pass condensers, C_{11} and C_{12}, are mounted as close as possible to Terminals 1 and 7 with short ground leads, thence going to the aluminum bracket. The center-tap lead from the filament transformer is connected directly to the beam-forming plate terminal on the socket, where the ground connection is made.

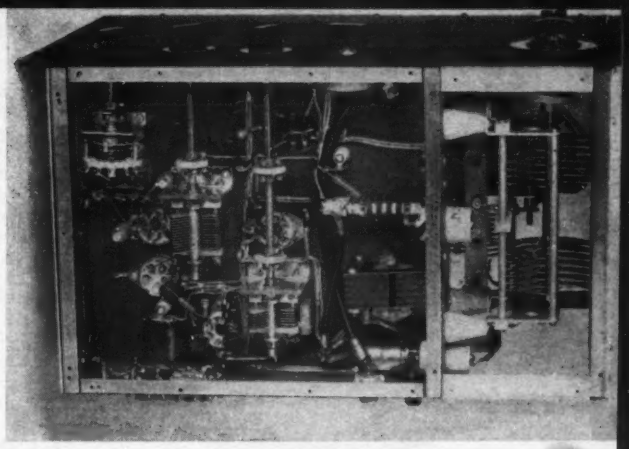
The homemade neutralizing condenser, C_{16}, is made by cutting two strips of copper flashing or other metal ⅝ inch wide and 2 inches long. One end of each strip is drilled to pass a 6-32 screw. The end of one strip is then bent so that when the two are mounted on the 1⅜-inch ceramic stand-off insulators (National GS-1), as shown in the photograph, one will be ½ inch above the other, forming the plates of a condenser. Capacity is adjusted by trimming one or both plates to reduce the overlap and by changing the spacing between plates.

Plate by-pass condenser C_{14} is mounted between the frame of the tuning condenser and a soldering lug bolted to the bracket that supports the 813 socket. The ground connection is made close to the spot where the filament by-pass condensers are returned, and a heavy lead made from ⅜-inch copper strap makes the connection from the "hot" side of C_{14} to the tuning-condenser frame. The high-voltage lead passes from this junction point through the chassis in a ¾-inch ceramic bushing (Millen 32103) to RFC_4 inside. In addition, the high voltage is applied to the stator of C_{15} through the center tap of the plate coil, L_3. Connection from this point to RFC_4 is made through a second ¾-inch ceramic bushing that is visible in the bottom view.

The layout of the oscillator and driver stages is shown in the bottom view. These stages are "staggered" across the chassis, with the crystal switch and crystal sockets being in the upper left-hand corner near the panel, the 6AG7 oscillator tube 5¼ inches behind the panel and 2½ inches in from the edge of the chassis, and the 6V6 tube 1½ inches from the rear and 4½ inches in from the edge. The tuning condensers for these stages are placed alongside the tube sockets, insulated from the chassis by being mounted on polystyrene plates held by small brackets cut from ½-inch angle stock. The socket for the 6Y6G is mounted near the center of the chassis immediately in front of the tuning condenser of the 6V6 stage and in line with the oscillator tube. Sockets for the small plug-in coils are placed as shown, with the oscillator coil centered 1½ inches behind the 6AG7, and the doubler coil between the 6V6 and the socket

[5] A close-up view of this assembly appeared on the cover of *QST* for April, 1951.

Rear view of the transmitter with part of the shield enclosure removed to show the "outboard" mounting of the final-amplifier tank circuit. The interior construction of the shielding and the meter box are also shown.



Bottom view of the transmitter, showing details of the exciter stages, harmonic filters, and the mounting of the large tuning condenser on one end of the chassis.

for the 813. A short lead passes through a grommet-lined hole to make the connection between the coil socket and the 813 grid.

The 10-volt filament transformer, T_2, is mounted inside the chassis beneath the 813 so that short secondary leads to the tube socket can pass through a hole in the chassis. These leads are shielded, with the braid grounded both inside the chassis and to the bracket that holds the tube socket. The 6.3-volt transformer, T_1, is mounted on the top of the chassis, close to the front panel.

Connection from the shielded swinging link to the coaxial output connector on the rear of the chassis is made through a length of RG-8/U coaxial cable visible in the bottom view. The shielded leads from the link must be "dressed" so that they will not touch any part of the amplifier tank circuit. This is done by passing the leads *over* the grounded shaft that connects the pivot arm of the link assembly to the control knob on the front panel, then toward the panel, and thence down to a hole in the front right-hand corner of the chassis. The braid is grounded to the top of the chassis, and the two insulated link leads then pass through the grommet-lined hole to make the junction with the coaxial cable. The braid of the cable and one of the link leads are then grounded to the inside of the chassis.

Power-Lead Filtering

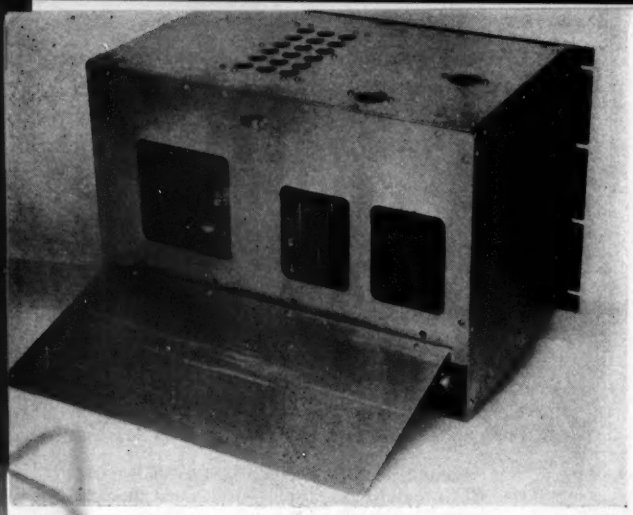
The harmonic filters in the power leads are mounted inside the chassis as close as possible to the point where the leads leave the chassis.[1] A five-circuit steatite terminal strip (Millen 37305) is used for the low-voltage connections, and a bakelite safety terminal (Millen 37001) for the high voltage. The filter for the high-voltage supply lead comprises RFC_8 and C_{24}. The Hypass condenser is bolted to the inside of the chassis close to the safety terminal. It is visible in the lower right-hand corner of the chassis in the bottom view. RFC_8 is mounted between one of the axial leads of this condenser and a 1-inch ceramic stand-off insulator placed nearby. The filters for the low-voltage supplies are mounted between the terminals of the steatite strip and small tie points bolted to the chassis. RFC_9 and RFC_{10} should be mounted at right angles to each other to minimize coupling between them. By-pass condensers C_{20} and C_{25}, which complete these filters, are mounted with as short leads as possible between the terminal strip and chassis ground. The 115-volt a.c. leads are filtered by C_{26} and C_{27} with similarly short leads.

The VFO input connector, J_1, is mounted on the rear of the chassis alongside the steatite power-terminal strip. A short length of RG-59/U coaxial cable runs from the connector to the crystal switch.

All heater and d.c. wiring within the transmitter is done with shielded wire. Belden No. 8656 wire is used for the heater leads and the d.c. wiring is done with Belden No. 8885. The latter carries a break-down rating of 4000 volts. It is therefore usable even in the high-voltage circuits if reasonable care is taken when making connections so that the insulation is not punctured by stray wisps of the braid or damaged by excessive heat.

Shielding

The first step toward completing the shielding is to bolt the panel to the chassis in the position described earlier in this article. Then the remainder of the enclosure can be "built up" from aluminum sheets along the lines shown in the photographs. The method we used is the simplest, requiring no tools more elaborate than a hack saw, a few files, some ½-inch angle stock, drills, a 6-32 tap and a good supply of 6-32 machine screws. First, cut to size the various pieces that go to make up the box. The top and bottom plates are 16⅞ by 9⅞ inches, the sides 12 by 10 inches, and the rear 17 by 12 inches. A section 2½ by 11¼ inches is cut out of the lower right-hand corner of the rear plate to provide clearance for the terminals on the rear of the chassis. In addition, access holes are cut through the rear plate, as shown in the photograph, so that the coils can be changed when the transmitter is installed in a rack or cabinet. The largest of these holes is 4¼ inches square, and it is placed 2¼ inches in from the left-hand edge. The two smaller holes are



Rear view of the transmitter with the hinged "door" opened to show the access holes through which coils are changed. Details of the ventilating holes in the top plate are also shown.

3 by 4 inches, and are placed behind the smaller plug-in coils.

The entire box is held together by lengths of ½-inch angle stock which have been drilled and tapped for 6-32 screws. Ventilation holes made with socket punches are cut in the top cover over the tubes. The holes are covered with copper screening to preserve the effectiveness of the shielding.

The access holes in the rear plate must also be covered during operation if the shielding is to be kept tight. This is accomplished by the method shown in the rear view of the assembly. A "door" 15¾ by 7½ inches is bolted to the rear plate on a length of piano hinge. The hinge is mounted in such fashion that the door rests flat against the rear plate when it is closed, and the door itself is large enough to overlap the access holes by at least ½ inch on all sides. A simple tab mounted at the top holds the door closed.

To insure against harmonic leakage through the meter holes in the panel, the meters are enclosed in a shield box built as shown in the rear-view photograph. The meters themselves are mounted on a sheet of ¼-inch Presdwood, 9½ by 2⅞ inches, which fits into the front of the box. The panel is recessed ½ inch from the open face so that the meter cases will not touch the copper screening used to shield the 2¼-inch viewing holes in the panel. The entire assembly is bolted against the inside of the panel, with the copper screening sandwiched between the mounting flange and the panel. Here, too, it is necessary to scrape the paint off the panel where the flange contacts it. To make it easier to read the meters, the copper screening is given a thin coat of flat-black paint after assembly. This eliminates the reflected glare that otherwise reduces the transparency of the screen.

Shielded wire connects the meters to the circuits of the transmitter through harmonic filters comprising RFC_5, RFC_7, RFC_9, C_{18}, and C_{21}. No condenser is used in conjunction with RFC_9. The filters are mounted inside the chassis, close to the holes through which the meter leads pass. C_{19}, C_{22}, and C_{23} are connected directly across the respective meter terminals.

Adjustment & Operation

The only critical adjustments needed are to be certain that the small plug-in coils cover the proper ranges, and to neutralize the 813. If the coil specifications set forth in the parts list are followed closely, it will be possible to tune the plate circuit of the 6AG7 to either 3.5 or 7 Mc. with the first coil, and to either 7 or 14 Mc. with the second. Resonance in both the 6AG7 and 6V6 stages is indicated by MA_1, which is connected in the common supply lead. With the desired coils in place, the excitation control set fully clockwise and the key closed, apply plate voltage (between 350 and 400 volts d.c.) to the exciter stages. Turn the oscillator tuning condenser until the meter kicks upward, indicating that the 6V6 stage is being driven. Next, turn the 6V6 plate-tuning condenser until the meter reading dips, indicating that the stage is tuned to resonance. Now, touch up the tuning of the oscillator stage slightly. This readjustment will produce a slight additional reduction in the current indicated. At this point the 6V6 should be driving the 813 stage into grid current, as indicated by MA_2. Depending on the band selected and the plate voltage applied to the exciter stages, grid current will be at least 15 ma. (It will probably run considerably more than this except in the case of 28-Mc. operation.)

Now adjust neutralizing condenser C_{16} to obtain minimum feed-through of r.f. from the exciter stages to the final-amplifier tank circuit.[6] To do this, couple an indicating wavemeter to the tank circuit, tune the circuit to resonance, and adjust C_{16} by bending or trimming the plates to obtain minimum indication.

Once the amplifier is neutralized, connect a dummy load to the output circuit. This is best done by connecting an antenna coupler to the swinging link of the amplifier through a

short length of RG-8/U coaxial cable, and then tapping a 250- or 300-watt lamp bulb across a few turns of the coil in the coupler. Apply plate and screen power to the 813, and resonate the tank circuit as indicated by a sharp dip in the current shown by MA_3. This should be done quickly, because the off-resonance plate current will exceed 300 ma., dipping to a very low value at resonance. Load the amplifier by adjustment of the antenna tuner and the swinging link until plate current of 200 ma. or slightly more is indicated. Now open the key. If the clamp tube is operating properly, plate current in the 813 stage will drop to about 40 ma., and the current in the first two stages will be about 45 ma. Grid current in the 813 stage under these conditions should be zero. To check for stability of the 813 stage, rotate the plate condenser slowly through its entire range, at the same time watching for any change in plate current, and for any indication of grid current. If a change takes place, or if grid current flows, check with a wavemeter to find the frequency at which the stage is oscillating. If it is near the operating frequency, readjustment of the neutralizing condenser is called for. If oscillation is in the v.h.f. range, the usual cures for such parasitics should be applied.

When certain that the amplifier is stable, the transmitter may be put on the air. A low-pass filter such as that described in the 1951 edition of the *Handbook*, or one of those available commercially, should be installed in the coaxial line between the transmitter and the antenna coupler in all areas where TV receivers are nearby. If a.m. 'phone operation of the transmitter is desired, a small iron-core choke should be inserted in the screen-grid supply lead as described on page 279 of the 1951 *Handbook*.

Performance

To discover how well this transmitter would perform (with respect to TVI) in a "fringe" area, it was installed at the writer's home, which is 45 miles from the nearest TV station. With a TV receiver installed within 15 feet of the transmitter and tuned to Channel 6, which has a direct harmonic relationship to all of the principal amateur bands below 50 Mc., the following results were obtained:

It was impossible to produce any interference when the transmitter was operated at 3505 kc., even with large portions of the shield enclosure removed. A faint interference pattern was visible when output was at 7010 kc. and the top cover of the shield box was removed. The interference disappeared when the shield cover was merely placed over the box without fastening any of the screws. With the transmitter tuned to 14,050 kc., it was necessary to bolt all members of the shield box together firmly and to reduce grid current in the 813 stage by means of the excitation control to 15 ma. to remove the last traces of interference. Increasing grid current to 20 ma. caused a reappearance of a faint interference pattern, but as pointed out earlier, fundamental output does not increase anywhere near as rapidly as harmonic output when grid current is raised beyond certain limits, so there is no point in operating at more than 15 ma. With the transmitter tuned for output at about 28,050 kc., a faint interference pattern was noticed until grid current was reduced to 10 ma. When the frequency was raised to 28,500 kc. the interference pattern became invisible from normal viewing distances, and grid current could be restored to 15 ma. without its reappearance.

In all cases described above, the same antenna was used and a low-pass filter was installed between the transmitter and the antenna coupler. Removal of the filter resulted in marked increase of the interference, but under no circumstances was the interference serious enough to destroy completely the usefulness of the picture.

These results, in a location where even a single (unshielded) 807 rig operating in the 3.5-Mc. band has been known to eradicate Channel 6, are proof enough to the writer that this transmitter has what it takes in spite of the purposeful omission of some of the more complex harmonic-reducing circuitry. The rig is simple both in construction and circuit, yet its harmonic output is low enough to permit interference-free operation to be enjoyed in all but a few isolated weak-signal areas.[7] In such areas more stringent adherence to even the "fine points" of harmonic reduction are called for. We'll wager, however, that there won't be many situations that this rig can't handle.

[6] See "Neutralizing Procedure," *The Radio Amateur's Handbook*, 1951 edition, p. 169.

[7] Subsequently, similar tests were made in the ARRL laboratory with TV sets of several different manufacturers. In all cases *harmonic* interference was negligible. It was quite apparent, however, that some TV sets are more susceptible to blanketing by the *fundamental* of an amateur transmitter than others. In such cases, the interference can sometimes be eliminated by installation of a high-pass filter at the input terminals of the TV set. In others, it is necessary to make modifications within the TV receiver to eliminate its response to signals outside of the TV range. Of interest, in this respect, is the experience of Dallas, Texas, amateurs as described in June, 1951, *QST*.

NATIONAL CONVENTION REMINDER

Well, it won't be long now — July 27, 28 and 29 are the dates, and Seattle the location. See last month's *QST* for the dope on the program and the special train. And make your reservations now; write John Gruble, W7RT, 1921 Atlantic St., Seattle 44, Washington. The Committee asks that all licensed YLs planning to attend advise W7LCS, Toddy Nye, 1802 12th Ave., Seattle 22, which will greatly facilitate the arrangements being made by the YL planning group. George Rollins, W3GA, and Ivan Loucks, W3GD, of FCC's staff, will be among those present, as will a delegation of several from ARRL Hq., including President Bailey, W2KH. CU there!

A 'Phone Man's VFO

Stable Unit with Reactance Modulator

BY CHARLES A. DENE,* W3CPC

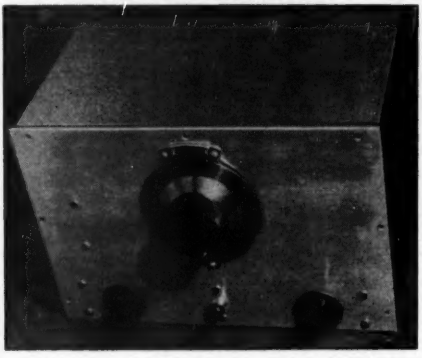
High-C and series-tuned VFO circuits each have their adherents and, of course, there is something to be said for both. However, when a VFO is to be used primarily for 'phone work, drift is probably one of the most important considerations. There are few who will argue that in this respect the series-tuned circuit does not have an advantage. This characteristic was demonstrated to the satisfaction of the writer in actual comparisons with several other types of circuits. Thus it was the choice in building the VFO-f.m. exciter unit shown in the photographs. It was designed as a companion unit for a gang-tuned multiplier-exciter. [To be described in a later article in *QST* — *Ed.*]

The circuit diagram is shown in Fig. 1. A 6J5 is used in the oscillator and this is followed by a 6AG7 isolation stage coupled to the cathode of the 6J5. These more substantial tubes replace miniature equivalents tried in an earlier model. The oscillator operates at 3.5 Mc. and the output of the 6AG7 is fixed-tuned to the same band. The plate of the oscillator and the screen of the amplifier are operated from a regulated 150-volt tap on the power-supply output, while the plate of the amplifier and the audio tubes take the full supply voltage.

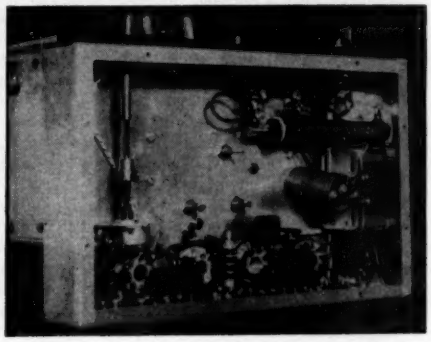
The modulator is the resistance-variation type.[1] A 6SJ7 speech amplifier drives a 6J5 modulator. The power supply also follows standard practice. A small b.c. replacement-type transformer is entirely adequate for the job. The power is controlled by the double-pole three-position switch, S_1. In one position, the a.c. is turned on and the high-voltage center-tap is switched to a pair of terminals on the power connector. If relay contacts are connected across these terminals, the relay can then be used as a remote high-voltage control. In the third position, the a.c. is still on and the high-voltage center-tap is grounded directly, turning on the high voltage. Thus, with no relay connected across the terminals, or with the relay contacts open, high voltage can be controlled manually by switching between the center and last positions.

* 7137 Jackson St., Philadelphia 35, Penna.

[1] Lipman, "Simple Approach to Narrow-Band F.M.," *QST*, May, 1948, p. 40.



The completed VFO-frequency modulator unit.



Bottom view of the frequency-modulated VFO.

Construction

The components, including those for the power supply, are assembled on a 7 × 11 × 2-inch aluminum chassis with an 8 × 10-inch panel. The panel, as well as the box that encloses the oscillator tank circuit, is of ⅛-inch sheet for rigidity. The box measures 4 by 5 by 6 inches and is assembled with the help of short pieces of angle stock. It is fastened securely to the panel and chassis using countersunk flat-head screws in the area of the dial to avoid interference.

Special care should be taken to mount and wire the tank-circuit components as rigidly as possible. Sturdy double-bearing condensers should be employed for the tuning condenser, C_1, and the band-set condenser, C_2. All fixed condensers that may have an effect on frequency, such as the excitation condensers, C_3 and C_4, the grid condenser, C_5, and the coupling condenser, C_7, should be of the zero-drift silvered-mica type.

The shaft of the tuning condenser, C_1, is centered on the panel at a height that will permit mounting the National type N dial above the chassis line. The condenser is mounted on an L-shaped bracket fastened to the back of the panel with flat-head screws. To eliminate the possibility of backlash, no flexible shaft coupling

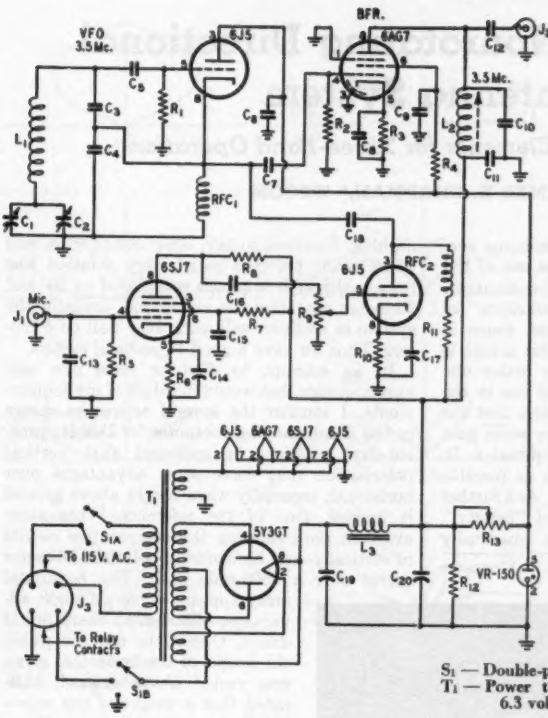


Fig. 1 — Circuit of the VFO-frequency modulator unit.

C_1 — Double-spaced 20-μμfd. variable (Hammarlund MC20-SX or equivalent).
C_2 — 100-μμfd. midget variable (Johnson 100H15).
C_3, C_4 — 0.001-μfd. silvered mica.
C_5, C_7 — 100-μμfd. silvered mica.
C_6, C_8, C_9, C_{11}, C_{15}, C_{16}, C_{18} — 0.01-μfd. mica.
C_{10}, C_{12}, C_{13} — 100-μμfd. mica.
C_{14}, C_{17} — 5-μfd. 50-volt electrolytic.
C_{19}, C_{20} — 8-μfd. 450-volt electrolytic.
R_1 — 47,000 ohms, ½ watt.
R_2 — 22,000 ohms, ½ watt.
R_3 — 2200 ohms, ½ watt.
R_4 — 47,000 ohms, 2 watts.
R_5 — 10 megohms, ½ watt.
R_6 — 1000 ohms, ½ watt.
R_7 — 2 megohms, ½ watt.
R_8 — 0.47 megohm, ½ watt.
R_9 — 0.5-megohm potentiometer.
R_{10} — 2200 ohms, ½ watt.
R_{11} — 0.22 megohm, ½ watt.
R_{12} — 50,000 ohms, 25 watts.
R_{13} — 6000 ohms (min.) with slider, 10 watts (min.).
L_1 — 33 turns No. 18 enameled, 1½ inches diam., 2¾ inches long or 1¼ inches diam., 2½ inches long (National XR13 form).
L_2 — 75 turns No. 30 enameled on National XR50 slug-tuned form, close-wound (17 μh. max.).
L_3 — 8-hy. 75-ma. filter choke.
J_1 — Microphone connector.
J_2 — Coax connector.
J_3 — Four-prong connector.
RFC_1, RFC_2 — 2.5-mh. r.f. choke.
S_1 — Double-pole three-position rotary.
T_1 — Power transformer: 350–0–350 r.m.s., 75 ma.; 6.3 volts, 2 amp.; 5 volts, 2 amp.

is used; the dial hub is connected directly to the condenser shaft.

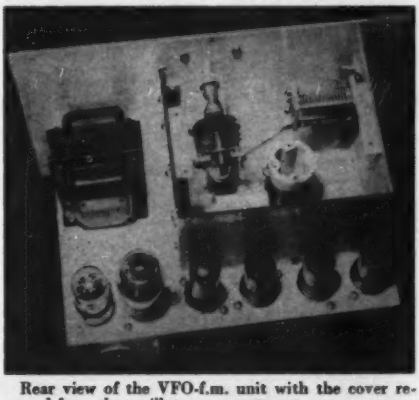
The band-set condenser is fastened to the outside wall of the box so that it can be adjusted from the side. The coil is wound on a ceramic form found in surplus stocks. A grooved form is preferable, but if such is unobtainable, a National type XR13 form can be used. In this case, the coil can be mounted against the back wall of the box. The two excitation condensers, C_3 and C_4, are cemented flat against the chassis, between the coil and the tuning condenser. Connections between these condensers and the oscillator-tube socket underneath are made through small feed-through insulators (National type TPB). All connections from the coil to the variable condensers are made with No. 14 wire.

The tubes are lined up along the rear, external to the compartment housing the tank circuit, to isolate the latter from direct tube heat. From right to left in the rear-view photograph are the two modulator tubes, the 6J5 oscillator, the 6AG7 buffer, the VR150 and the 5Y3GT rectifier. The slug-adjusting screw of L_2 protrudes between the 6AG7 and the VR tube. The power transformer occupies the otherwise vacant corner of the chassis.

Underneath, the power-supply filter components, including the choke, the electrolytics, the bleeder resistor and the dropping resistor for the VR tube, are to the right. No. 18 solid wire is used for all power circuits because it will stay put when formed against the chassis. A terminal board mounted on spacers against the rear edge of the chassis provides a rigid mounting for most of the small components.

The audio gain, or deviation, control is mounted on a bracket near the left rear corner, close to the 6J5 modulator. The control shaft is extended to the panel. The power-control switch, S_1, is placed on the right to balance, and the

(Continued on page 88)



Rear view of the VFO-f.m. unit with the cover removed from the oscillator compartment.

A Vertical Nonrotating Directional Antenna System

Using Phased Elements for Three-Band Operation

BY JAMES K. CHAPMAN,* W2OOM

THE eternal search for the best antenna system circumstances will permit is one of the most constant problems of the amateur. There are probably as many "best solutions" as there are amateurs, especially when space is restricted. The array described in this article is one man's answer, at least until a better one comes along. Since my chief interest lies in the 10- and 20-meter bands, I decided first that the system must be directional and give some gain over a doublet at these higher frequencies. In addition, as much of the radiation as possible should be concentrated at low angles. As a further requirement, it should be a thing of "beauty," even to the neighbors, and cost practically nothing. Needless to say, some compromise had to be made before a satisfactory solution was found. Although emphasis was placed on 10- and 20-meter operation, as mentioned, actually the system in addition will work very well on 6 meters. Thus we have a good three-band system.

In an attempt to discover some new and radical design that would fulfill all of my requirements, I studied the several references shown in the accompanying footnotes.[1–5] Despite present-day practices, it appeared that vertical polarization may have some advantages over horizontal, especially when height above ground is limited. One of the references [1] has some excellent data showing the comparative results of vertically- and horizontally-polarized 16-meter waves over a 2500-mile path. The horizontal array appeers to have a slight advantage, although no sharp line is drawn. One of the tests, in which the height of the horizontal array was varied above ground, indicated that a height of one wavelength above ground was necessary in order to realize the vertical angle for best transmission over the particular path. After examining the vertical patterns [5] of both horizontal and vertical systems, I came to the conclusion that a carefully-designed vertical system

* % Electronics Dept., General Electric Co., Electronics Park, Syracuse, N. Y.

The phased vertical antenna system installed at W2OOM. In this arrangement, only one small mast is required.

[1] "Development of Directive Transmitting Antennas by RCA Communications, Inc.," *Proc. I.R.E.*, Oct., 1931.

[2] "Theoretical and Practical Aspects of Directional Transmitting System," *Proc. I.R.E.*, July, 1931.

[3] "Certain Factors Affecting Gain of Directive Antennas," *Proc. I.R.E.*, Sept., 1930.

[4] *Radio Engineer's Handbook*, Terman, 1st ed., pp. 771–824.

[5] *ARRL Antenna Book.*

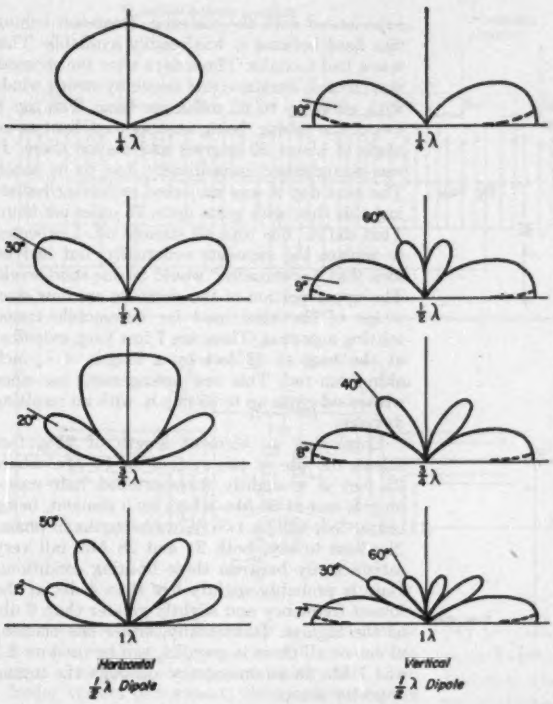


Fig. 1 — A comparison of the vertical patterns for horizontal and vertical dipoles for various heights above ground. Dotted lines indicate approximate ground-loss effects.

could be made to perform well without resorting to the tall supporting structures required by an equivalent horizontal antenna.

Vertical vs Horizontal

It might be interesting to review the thoughts that led me to the selection of a vertical system. It has been well established that the desired vertical angle for maximum distance on 20 meters is about 15 degrees.[1, 5] Fig. 1 shows the vertical patterns of horizontal and vertical half-wave dipoles located at various heights above ground. It is immediately apparent, by comparison, that to obtain a 15-degree vertical angle with the horizontal antenna, it is necessary to go to one wavelength in height. But at the same time, a large vertical lobe of little usefulness appears at 50 degrees. The vertical dipole has a radiation lobe of 10 degrees in the vertical plane when at a center height of ¼ wavelength. Ten degrees is a little too low for 20 meters, but the pattern shows a rather broad nose, leaving a considerable amount of energy at 15 degrees. Even 20 degrees is still useful if some high-angle work (minimum 20-meter paths) is desired.

If we decide on a 20-meter (32-foot) vertical dipole, it can be set up with one end almost on the ground and yet a very good vertical pattern will result. This same vertical antenna will work well on 10 because the energy is now concentrated at about 9 degrees. The spurious lobe at 60 degrees is reduced by the fact that the antenna, being center-fed, operates on this band as two collinear half-wave elements arranged vertically. The resulting pattern is shown in Fig. 2. If this antenna were in the horizontal plane, it would require a height of nearly 60 feet to achieve the same vertical-angle coverage, rather than the 35 feet over all needed for the vertical system. Although greater ground attenuation is unavoidable in such a system, it seems to me that this is greatly outweighed by the advantages of simpler antenna structure, the nearly ideal vertical angle, and the relative freedom from useless high-angle radiation.

After making the decision to go to vertical polarization, many forms were considered. The final selection was the bidirectional end-fire, or "8JK" arrangement. In order to get coverage in all directions and still not have to rotate the elements mechanically, I decided to use three fixed verticals placed as shown in Fig. 3. The three vertical elements are spaced equidistant at the corners of an equilateral triangle. A separate line is used to feed each element at the center. By connecting any two elements 180 degrees out of phase, it is possible to get a "figure-eight" pattern. Fig. 4 shows, on one center, the three patterns obtainable in the horizontal, illustrating the complete coverage. The maximum signal-strength variation around the complete 180 degrees is about 1 db.

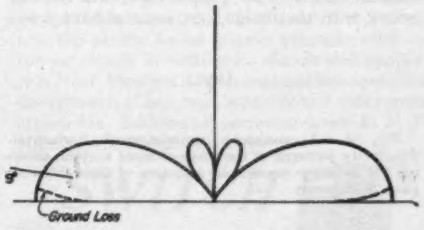


Fig. 2 — Vertical pattern of two-section 8JK vertically-polarized antenna, center ½ wavelength above ground.

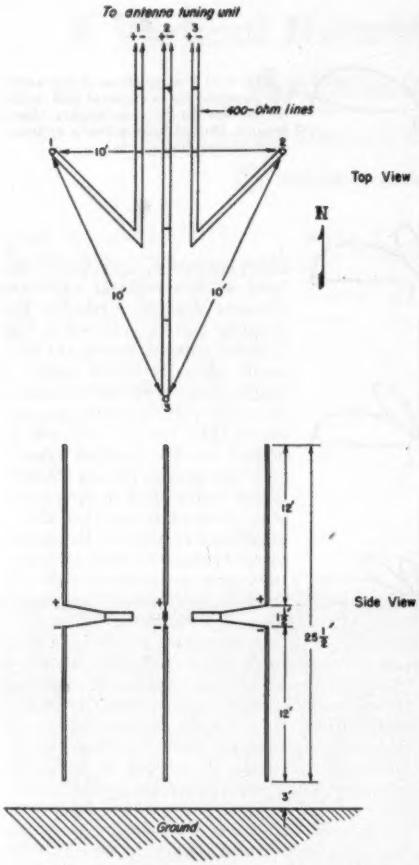


Fig. 3 — General plan of antenna arrangement at W2OOM.

Construction

The photograph shows the completed structure at W2OOM. Originally all the elements were of ¾-inch aluminum tubing, 12 feet long, spaced 18 inches in the middle, giving an over-all element length of 25½ feet. There was nothing wrong with the design, but some difficulty was experienced with the material. Dead-soft tubing was used because it was readily available. This was a bad mistake. Three days after the antenna was erected, Syracuse was struck by strong winds with gusts up to 65 miles per hour. The top 8 feet of the tubing, being unsupported, bent at an angle of about 20 degrees and stayed there. It was straightened immediately, but to no avail. The next day it was subjected to further buffeting, this time with gusts up to 75 miles per hour. That did it. The tops all sheared off. I expected to replace the elements eventually, but had no idea that "eventually" would be one short week. The upper portion of the elements are now steel whips of the kind used for automobile transmitting antennas. These are 7 feet long, extended at the base to 12 feet by a length of ¾-inch aluminum rod. This new arrangement has since withstood gusts up to 95 m.p.h. with no resulting damage.

Employing an element length of 25½ feet allows the use of the system on 14 Mc. where 25 feet is a slightly foreshortened half wavelength, and at 50 Mc. where each element, being center-fed, will be two ⅝ wavelengths in phase. Needless to say, both 21 and 28 Mc. fall very satisfactorily between these limiting conditions. Gain is probably slightly less than 4 db. at the lowest frequency and slightly greater than 6 db. at the highest. Incidentally, either one element alone, or all three in parallel, can be used on 3.5 and 7 Mc. in an emergency although the tuning is pretty sharp.

Feeding

The tuning equipment is shown in the schematic of Fig. 5. It is a resonant device with suitable switching to change the feeder connections and to select coil taps for the various frequency bands. The input is introduced by means of a variable-coupling loop constructed of coaxial cable [5] in order to get electrostatic shielding between the transmitter and the antenna system. All three feeder lines are carefully cut to the

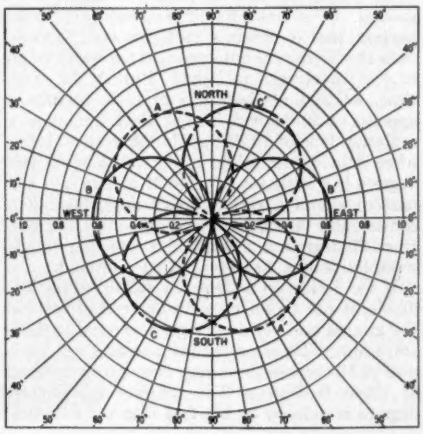


Fig. 4 — Approximate superimposed horizontal-directivity patterns of the three-element system, showing the coverage possible by selection of three different pairs of elements.

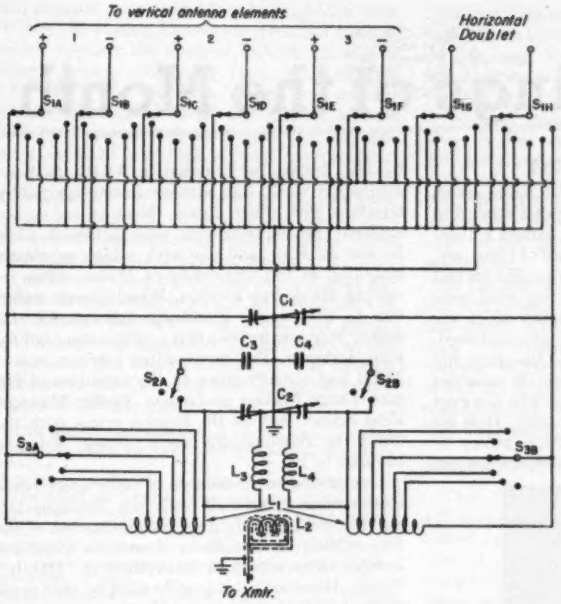


Fig. 5 — Circuit diagram of the antenna-tuning unit and switching system.
C_1, C_2 — 220 $\mu\mu$fd. per section.
C_3, C_4 — 220-$\mu\mu$fd. mica.
L_1 — Two coils, each 4 turns per inch, 12 turns total, 3¼ inches diam., tapped at 1, 2, 4 and 8 turns, halves spaced 1¼ inches.
L_2 — 2-turn loop of RG59/U coaxial cable, 3¼ inches diam.
L_3, L_4 — 2.5-mh. r.f. choke (static discharge).
S_1 — 8-pole 6-position rotary switch.
S_2 — 2-pole 2-position rotary switch.
S_3 — 2-pole 6-position rotary switch.

same length so that they may be connected in any combination of pairs and still present the same impedance to the matching unit. The feeder system is resonant; therefore the tuning elements can be connected in parallel or series, depending on the feeder length used.

Results during a year's experience with this antenna at W2OOM have been very gratifying. My percentage of contacts *versus* calls made rose remarkably on both 10 and 20. Earlier experience had been with everything from attic-bound 8JKs to roof-mounted ground-plane verticals. The neighbors may not consider my array a thing of beauty but neither do they condemn it as an eyesore.

HAMFEST CALENDAR

CALIFORNIA — Saturday, July 7th, at Wieland Gardens, San Jose — annual hamfest of the Santa Clara County Amateur Radio Assn., Inc. Barbecue dinner, entertainment, and the usual good time will be provided. Tickets, $3.00, available from Treas. "Pop" Nelson, 550 Minnesota, San Jose, Calif.

IDAHO — Saturday, Sunday and Monday, August 4th, 5th and 6th, at Big Springs, 20 miles south of west entrance to Yellowstone Park — W.-I.-M.-U. hamfest. Admission free! Cabins, camp grounds, community picnic, campfire programs, trout fishing. Bring surplus gear for the swap table, or to sell or give away! Commercial 115-volt a.c. available for portable operation.

ILLINOIS — Sunday, July 15th, at Weldon Springs State Park (4 miles east of Clinton, just off Ill. Rt. 10 or U. S. 51) — fifth annual picnic sponsored by the Central Illinois Amateur Radio Assn. Bring the whole family, a basket lunch, and a usable piece of gear for the grab bag. Auction sale of radio gear. No admission charge — free soft drinks. "Free for all — all for free!"

ILLINOIS — Sunday, August 12th, at Frankfort Park (on U. S. Rt. 45, ½ mile north of U. S. 30) — seventeenth annual picnic of the Hamfesters Radio Club. The friendliest get-together in the West — ask anyone who has attended the other sixteen! Tickets may be purchased in advance from W. Roberts, W9HOV, 7921 Woodlawn Ave., Chicago 19, Ill., at $1.50 each.

INDIANA — Sunday, July 15th, at Mound State Park, near Anderson — annual state hamfest of the Indiana Radio Club Council. Pack up the family and have them meet the gang. Particulars available from Peggy Coulter, W9JUJ, RFD 2, Box 362, Muncie, Ind.

WYOMING — Saturday and Sunday, July 14th and 15th, at Sourdough Youth Camp in the Big Horn Mountains, above Buffalo — Wyoming state hamfest. Camping, fishing, hamming, including high-altitude 2-meter tests. Get details from SCM A. D. Gaddis, W7HNI, P. O. Box 786, Gillette, Wyo.

HQ STAFF OPENING

Wanted for W1AW post, to replace an employee entering military service — an amateur with constructional and maintenance experience and the ability to set a good example when on the air. Apply in writing for details and application form. Mention ARRL organization-operating background, if any, age, amateur and other radio experience. Address all correspondence to F. E. Handy, ARRL Headquarters.

Happenings of the Month

HANDY NEW VICE-PRESIDENT

Francis E. Handy, W1BDI, Communications Manager of ARRL with over 26 years service to the amateur fraternity, has been named a Vice-President of the League by the Board of Directors. Such action was contemplated at the 1951 annual meeting in May, and confirmed by mail vote among the directors subject to approval of the new charter — which has now been accomplished.

"FEH" needs no introduction to the operating and organizationally-minded person in amateur radio, and very little to anyone else who has ever pushed a bug or breathed into a mike. It is his over-all responsibility to set ARRL policy in operating matters, to see that contests are set

W1BDI

up and run properly, to nurture traffic systems and networks, to decide on rules for ARRL operating and achievement awards and oversee their issuance, to supervise the Hq. station W1AW, to promote the public-service activities of amateur radio particularly through emergency preparation and planning, to . . . well, we could go on and on but we think you get the idea.

When he came to League Headquarters in 1925 to take over the administration of the Communications Department and its field organization, Ed Handy brought with him a wealth of the kind of experience the job required. First licensed in 1919 as 1BDI, he had spent the intervening years building and operating an amateur station that had an enviable performance record. A description of 1BDI-1XAH, Orono, Maine, appearing in July 1924 *QST*, starts out with this sentence: "This station is an example of what a poor location with a poor antenna can do when the man behind the key knows what he is doing and makes the best of circumstances." Always a balanced amateur, he worked plenty of DX, handled traffic, participated in ARRL field organization work, but without letting his hobby interfere with other duties. Most of his earlier amateur accomplishments were attained while he was an E.E., and one with a high scholastic standing, at the University of Maine. After receiving his degree in 1924, Westinghouse called him to work in its Pittsburgh laboratories. Industry was not to hold this bright young lad for long, however. The outstanding performance of 1BDI had already come to the attention of Hiram Percy Maxim and when Traffic Manager Fred Schnell left on the historic cruise with the Navy to demonstrate short waves, Ed was brought to Hq.

One of the more notable of Ed's accomplishments while connected with the Headquarters was the writing, practically single-handed, of the first edition of *The Radio Amateur's Handbook* in 1926. Often known to the brethren as "Handy's Handy Handbook," it is still called by that name even after tremendous growth in popularity and size of the work has caused it to become a major publication task in which the whole Headquarters staff now participates.

When World War II came along, Uncle Sam took advantage of Ed Handy's ability and experience in communications. He was commissioned an officer and went on active duty at the Directorate of Communications, Headquarters Army Air Forces, in Washington during 1942. His later military assignments took him all over the United States, to North Africa and the European Theater. During the war he was as conscientious a worker as he had always been at League Hq. and came out of military service with the rank of colonel and the Legion of Merit.

Always an active amateur, Ed Handy scarcely misses a day without several contacts entered in the W1BDI log. His mobile set-up, identified by the license plate "ARRL," is a familiar sight along Connecticut highways and byways where he is often spotted pounding brass on 80 and 40 meters or talking with the gang on 2 meters. He keeps regular skeds with his son Dick, W1RZP, who became a licensed amateur with no particular urging on the part of his dad. W1BDI is active in the Connecticut 'phone and c.w. nets and can always be counted upon to show up in CD Parties, LO-nites, the Sweepstakes, V. H. F. Parties and other League activities.

AMATEUR RULES CHANGES

Early in May FCC took action to bring our rules into line with its new regulations governing antenna structures near airports. Antennas already in-existence (before February 15, 1951) are not affected. Any new structure, or change in present structure, involving a pole or mast or

other support more than 1 foot in height for each 200 feet the station location is from the nearest airport, requires the filing of FCC Form 401-A, revised (copies obtainable from your district FCC office). For example, if you are exactly one-half mile airline from the nearest airport (2640 feet) you can put up a mast 13.2 feet (actually, up to 14 feet) high without any problem; if you are two miles airline, your mast can be 53 feet high before you are covered by the new regs. A general exemption is made in the case of certain antenna structures of limited height, however — regardless of the distance from an airport, you are not covered by the new rules if your antenna is 20 feet or less in height, or if your mast or other support is mounted on a house or garage or other existing man-made structure so as not to increase the overall height of the existing structure by 20 feet. The new additions to our rules, effective immediately, are:

§ 12.9 *Antenna structure defined.* — The term "antenna structure" includes the radiating system and its supporting structures.

§ 12.10 *Aircraft landing area defined.* — An aircraft landing area means any locality, either on land or water, including airports and intermediate landing fields, which is used, or approved for use, for landing and take-off of aircraft whether or not facilities are provided for the shelter, servicing, or repair of aircraft, or for the receiving or discharging of passengers or cargo.

§ 12.60 *Limitation on antenna structures.* — (a) No new antenna structure shall be erected for use by any station in the Amateur Radio Service, and no change shall be made in any existing antenna structure used or intended to be used by any station in the Amateur Radio Service so as to increase its over-all height above ground level, without prior approval by the Commission, in any case when either (1) the antenna structure proposed to be erected will exceed an over-all height of 170 feet above ground level, except in the case where the antenna is mounted on top of an existing man-made structure and does not increase the over-all height of such man-made structure by more than 20 feet, or (2) the antenna structure proposed to be erected will exceed an over-all height of one foot above the established elevation of any landing area for each 200 feet of distance, or fraction thereof, from the nearest boundary of such landing area, except in the case where the antenna structure does not exceed 20 feet above the ground or is mounted on top of an existing man-made structure or natural formation and does not increase the over-all height of such man-made structure or natural formation by more than 20 feet as a result of such mounting. Application for Commission approval, when such approval is required, shall be submitted on FCC Form No. 401–A, in triplicate.

(b) In cases where FCC Form No. 401–A is required to be filed, further details as to whether an aeronautical study and/or obstruction marking may be required, and specifications for obstruction marking is required, may be obtained from Part 17, "Rules Concerning the Construction, Marking, and Lighting of Antenna Towers and Supporting Structures". Information regarding requirements as to inspection of obstruction marking, recording of information regarding such inspection, and maintenance of antenna structures is also contained in Part 17.

Also in May the Commission made final, to become effective June 30th, its "editorial" changes in certain of the amateur rules to bring them in conformity with present practice; the text is precisely that as printed on page 45 of May *QST*.

NOVICE CALL SIGNS

FCC has long indicated that amateur call signs for Novice Class licensees would be distinctive, and has now announced its system for assigning such calls. In the continental U. S. A., calls will be issued in exactly the same manner as regular ones, and from the same alphabetical series, except the prefix will be WN instead of plain W (with the later possibility, if calls are exhausted, of issuing KN Novice prefixes instead of plain K for regular licensees). If the Novice graduates to a higher grade of license during the year, his call becomes a regular one simply by FCC dropping the N. If he does not so qualify within the year, however, the call will not be held for his use in the event he does make the grade later.

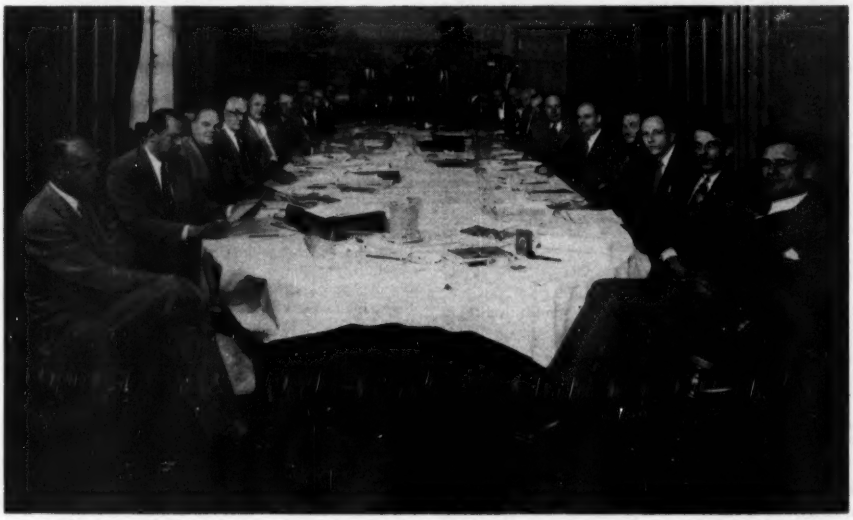
In the possessions, W will replace the K as the the first letter of the prefix in Novice calls, with the second letter still indicating the particular area. For example, a Novice in Hawaii might become WH6CBA, and one in Puerto Rico, WP4VB; if and when each graduates into a regular ticket, the calls become KH6CBA and KP4VB, respectively.

EXAMINATION SCHEDULE

The Federal Communications Commission will give amateur examinations during the second half of 1951 on the following schedule. Remember this list when you need to know when and where examinations will occur. Where exact dates or places are not shown below, information may be obtained, as the date approaches, from the Engineer-in-Charge of the district. *Even stated dates are tentative and should be verified from the Engineer as the date approaches.* No examinations are given on legal holidays. All examinations begin promptly at 9 A.M. except as noted.

Albuquerque, N. M.: Oct. 5th.
Amarillo, Tex.: Oct. 2nd.
Anchorage, Alaska, 52 Federal Bldg.: By appointment.
Atlanta, Ga., 411 Federal Annex: Tuesday and Friday at 8:30 A.M.
Bakersfield, Calif.: Sometime in Aug.
Baltimore 2, Md., 508 Old Town Bank Bldg.: Monday through Friday. When code test required, between 8:30 A.M. and 9:30 A.M.
Bangor, Me.: Sometime in Oct.
Beaumont, Tex., 329 P.O. Bldg.: Thursday and by appointment.
Birmingham, Ala.: Sept. 6th and Dec. 12th.
Boise, Idaho: Sometime in Oct.
Boston, Mass., 1600 Customhouse: Monday through Friday, 8:30 A.M.
Buffalo, N. Y., 328 P.O. Bldg.: Thursday.
Butte, Mont.: Sept. 13th.
Charlestown, W. Va.: Sometime in Sept. and Dec.
Chicago, 1300 U. S. Courthouse: Friday.
Cincinnati: Sometime in Aug. and Nov.
Cleveland, Ohio: Sometime in Sept. and Dec.
Columbus, Ohio: Sometime in July and Oct.
Corpus Christi, Tex.: Sept. 13th and Dec. 13th.
Dallas, Tex., 500 U. S. Terminal Annex Bldg.: Monday thru Friday.
Davenport, Iowa: Sometime in July and Oct.
Denver, Colo., 521 New Customhouse: 1st and 2nd Thursdays and by appointment.
Des Moines, Iowa: July 12th and Oct. 11th.
Detroit, Mich., 1029 Federal Bldg.: Wednesday and Friday.
El Paso, Tex.: Oct. 9th.
Ft. Wayne, Ind.: Sometime in Aug. and Nov.
Fresno, Calif.: Sept. 19th and Dec. 19th.

Grand Rapids, Mich.: Sometime in July and Oct.
Hartford, Conn.: Sometime in Sept.
Hilo, T. H.: Oct. 9th.
Honolulu, T. H., 609 Stangenwald Bldg.: Monday, 8:30 A.M.
Houston, Tex., 324 U. S. Appraisers Stores Bldg.: Tues. and Fri.
Indianapolis, Ind.: Sometime in Aug. and Nov.
Jackson, Miss.: Sept. 12th and Dec. 12th.
Jacksonville, Fla.: Oct. 13th.
Juneau, Alaska, 6 Shattuck Bldg.: By appointment.
Kansas City, Mo., 3200 Fidelity Bldg.: Friday, 8:30 A.M., also by appointment.
Knoxville, Tenn.: Sept. 19th and Dec. 19th.
Las Vegas, Nevada: Sometime in Oct.
Lihue, Kauai, T. H.: Oct. 23rd.
Little Rock, Ark.: July 11th and Oct. 10th.
Los Angeles, 539 Federal Bldg.: Wednesday, 9:00 A.M. and 1:00 P.M.
Louisville, Ky.: Sometime in Nov.
Manchester, N. H.: Sometime in Nov.
Marquette, Mich.: Oct. 31st.
Memphis, Tenn.: July 13th and Oct. 5th.
Miami, Fla., 312 Federal Bldg.: Monday and Thursday.
Milwaukee, Wisc.: Sometime in July and Oct.
Mobile, Ala., 324 U. S. Courthouse and Customhouse: Wednesday and by appointment.
Nashville, Tenn.: Aug. 8th and Nov. 7th.
New Orleans, La., 400 Audubon Bldg.: Monday through Friday, except Monday through Wednesday only at 8:30 A.M. when code test required.
New York, 748 Federal Bldg.: Monday through Friday.
Norfolk, Va., 402 Federal Bldg.: Monday through Friday except Friday only when code test required.
Oklahoma City, Okla.: July 19–20 and Oct. 18–19.
Omaha, Nebr.: July 19th and Oct. 18th.
Philadelphia, 1005 U. S. Customhouse: Monday through Friday.
Phoenix, Ariz.: Sometime in July and Oct.
Pittsburgh: Sometime in Aug. and Nov.
Portland, Me.: Sometime in Oct.
Portland, Ore., 307 Fitzpatrick Bldg.: Friday, 8:30 A.M.
Rapid City, S. D.: July 20th.
Reno, Nev.: Oct. 17th.
Roanoke, Va.: Oct. 6th.
St. Louis, Mo.: Aug. 9th and Nov. 15th.
St. Paul, Minn., 208 Federal Courts Bldg.: Friday.
Salt Lake City, Utah: Sept. 15th and Dec. 15th.
San Antonio, Tex.: Aug. 9th and Nov. 8th.
San Diego, 15-C U. S. Customhouse: By appointment.
San Francisco, 323-A Customhouse: Monday and Friday, 8:45 A.M. Also Advanced Class Monday through Friday.
San Juan, P.R., 323 Federal Bldg.: Thursday, and Monday through Friday at 8:00 A.M. if no code test required.
Savannah, Ga., 214 P.O. Bldg.: By appointment.
Schenectady, N. Y.: Sept. 12–13 and Dec. 5–6.
Seattle, 808 Federal Office Bldg.: Friday.
Sioux Falls, S. D.: Sept. 12th and Dec. 12th.
Spokane, Wash.: Sept. 11th.
Syracuse, N. Y.: Sometime in July and Oct.
Tallahassee, Fla.: July 14th.
Tampa, Fla., 410 P.O. Bldg.: By appointment.
Tucson, Ariz.: Sometime in Oct.
Tulsa, Okla.: July 23–24 and Oct. 22–23.
Wailuku, T. H.: Oct. 11th.
Wash., D. C., 415 22nd St., N. W.: Monday through Friday, 8:30 A.M.
Wichita, Kans.: Sept. 6th.
Williamsport, Pa.: Sometime in Sept. and Dec.
Wilmington, N. C.: Dec. 1st.
Winston-Salem, N. C.: Aug. 4th and Nov. 3rd.



The ARRL Board of Directors and League officials at the annual meeting of the Board in Hartford on May 11th. Seated around the table, *l. to r.*: Director Hill, Southeastern Division; Director Dosland, Dakota; Director Middleton, West Gulf; Director Canfield, Delta; Director Griggs, Southwestern; Director Hughes, Pacific; Vice-President Groves; Director Roberts, Northwestern; Director Keyes, Midwest; Communications Manager Handy; General Counsel Segal; President Bailey; Secretary Budlong; Senior Asst. Secretary Huntoon; Treasurer Houghton; Canadian General Manager Reid; Director Noble, New England; Director Matejka, Rocky Mountain; Director Brabb, Great Lakes; Director Marriner, Central; Director Johnston, Hudson; Director Martin, Atlantic; Director Jacobs, Roanoke. Rear, *l. to r.*: Technical Director Grammer; Quayle B. Smith, of the General Counsel's Office; Alternate Director Joos, Southwestern; Alternate Director Weingarten, Northwestern; Alternate Director Baker, New England; Assistant Secretary Baldwin.

MINUTES OF 1951 ANNUAL MEETING OF THE BOARD OF DIRECTORS, AMERICAN RADIO RELAY LEAGUE

May 11-12, 1951

1) Pursuant to due notice and the requirements of the By-Laws, the Board of Directors, of the American Radio Relay League, Inc., met in regular annual session at the Hartford Club, Hartford, Connecticut, on May 11, 1951. The meeting was called to order at 9:42 A.M., EDST, with President George W. Bailey in the Chair and the following other directors present:

Wayland M. Groves, Vice-President
Alexander Reid, Canadian General Manager
John H. Brabb, Great Lakes Division
Victor Canfield, Delta Division
Goodwin L. Dosland, Dakota Division
John R. Griggs, Southwestern Division
Lamar Hill, Southeastern Division
Kenneth E. Hughes, Pacific Division
William H. Jacobs, Roanoke Division
Joseph M. Johnston, Hudson Division
Alvin G. Keyes, Midwest Division
Wesley E. Marriner, Central Division
Walter Bradley Martin, Atlantic Division
Franklin K. Matejka, Rocky Mountain Division
A. David Middelton, West Gulf Division
Percy C. Noble, New England Division
R. Rex Roberts, Northwestern Division

Also in attendance, at the invitation of the Board as non-participating observers, were New England Division Alternate Director Frank L. Baker, Southwestern Division Alternate Director Walter R. Joos and Northwestern Division Alternate Director Karl W. Weingarten. There were also present Secretary Arthur L. Budlong, Communications Manager Francis E. Handy, Treasurer David H. Houghton, Technical Director George Grammer, Assistant Secretaries Richard L. Baldwin and John Huntoon, General Counsel Paul M. Segal and Quayle B. Smith of his office. The meeting was welcomed and briefly addressed by the Chair.

2) On motion of Mr. Dosland, unanimously VOTED that the minutes of the 1950 annual meeting of the Board of Directors are approved in the form in which they were issued by the Secretary.

3) On motion of Mr. Hill, unanimously VOTED that the annual reports of the officers to the Board of Directors are accepted and the same placed on file.

4) On motion of Mr. Middelton, unanimously VOTED that the Board, having examined its mail action in authorizing the furnishing of affiliated club lists in certain instances, now ratifies this action and decides to take the aforesaid position as of February 1, 1951.

5) On motion of Mr. Johnston, unanimously VOTED that all acts performed and all things done by the Executive Committee since the last annual meeting of the Board, and by it reported to the Board, are ratified and confirmed by the Board as the actions of the Board.

6) On the reception of reports of committees: Upon the request of Mr. Reid, after discussion and without objection, the report of the Finance Committee goes over to precede consideration of the appropriation for expense of this meeting. Mr. Noble stated the report of the Planning Committee had been mailed to all Directors. Mr. Roberts reported briefly for the Committee to Study Standing Committees. Mr. Griggs similarly reported briefly for the Membership and Publications Committee. Mr. Dosland moved to suspend the regular order of business and proceed to adoption of the report of the Membership and Publications Committee; but there was no second, so the motion was lost.

7) On motion of Mr. Hughes, unanimously VOTED that the annual reports of the Directors to the Board of Directors are accepted and the same placed on file.

8) At this point, supplementary oral reports were rendered by the officers of the League.

9) On motion of Mr. Johnston, VOTED, 13 votes in favor to 2 opposed, that the Secretary and General Counsel be instructed to petition the Federal Communications Commission to change the present system of issuing two-letter calls to a system which permits a person who was an amateur 25 years ago and has been licensed 15 years immediately preceding his application to be eligible for a two-letter call on application.

10) Moved, by Mr. Keyes, that it is the sense of this meeting that the Secretary be instructed to request FCC to open to narrow-band frequency and phase modulation all amateur frequencies available for telephony. Moved, by Mr. Brabb, that the motion be amended to instruct the Secretary to conduct a poll in *QST* on this subject; but there was no second, so the motion to amend was lost. Moved, by Mr. Johnston, that the motion be amended to request that the proposed arrangement be put on a one year trial basis; but the motion to amend was rejected. The question then being on the original motion, the yeas and nays being ordered upon request, the question was decided in the affirmative: whole number of votes cast, 16; necessary for adoption, 9; yeas, 13; nays, 3. Those voting in the affirmative are Messrs. Dosland, Hill, Hughes, Jacobs, Johnston, Keyes, Marriner, Martin, Matejka, Middelton, Noble, Roberts and Groves. Those who voted opposed are Messrs. Brabb, Canfield, and Griggs. Mr. Reid abstained. So the proposal was ADOPTED. Messrs. Brabb, Canfield and Griggs requested that they be shown as having favored referring this question to the membership for an expression of opinion.

11) The Board was in recess from 11:20 A.M. until 11:28 A.M.

12) On motion of Mr. Noble, VOTED that it is the policy of this Board that whenever possible proposed motions shall be submitted to the Secretary sufficiently in advance of each Board Meeting so that publicity can be given in *QST*, thus permitting membership comments to the individual Directors.

13) Moved, by Mr. Noble, that the YLRL be extended the privilege of having one page in each issue of *QST* provided that the YLRL meets the requirements of League affiliated radio clubs, i.e., at least 51% of its members must be licensed amateurs and at least 51% of these licensed amateurs must be League members. Moved, by Mr. Roberts, to amend the motion to give authority to the Editor of *QST* to use his discretion in the heading and amount of space to be given the new feature. Moved, by Mr. Griggs, to further amend to state that the column shall be written by a YL operator supplied by the YLRL. But, on motion of Mr. Dosland, it was VOTED to lay the matter, including the original motion and all its proposed amendments, on the table. On motion jointly of Messrs. Dosland and Noble, VOTED that the Editor of *QST* be instructed to have prepared (by a qualified licensed female amateur) a monthly column devoted to YL amateurs and their interests, said column to be included in *QST* not later than January, 1952, and said columnist to be paid an amount commensurate with other current *QST* columnists.

14) Moved, by Mr. Roberts, that the Secretary be instructed to file with the FCC a request that the amateur rules be amended to provide that all amateur Advanced Class licenses issued prior to March 1, 1951, shall automatically become Amateur Extra Class at the time that the Amateur Extra Class becomes available. But, on motion of Mr. Dosland, VOTED to lay the matter on the table.

15) The Board was in recess for luncheon from 12:15 P.M. to 1:53 P.M.

16) Moved, by Mr. Hughes, that By-Law 5(a) be amended by deleting from the Southwestern Division the county of Mono and adding Mono County under the Pacific Division. The yeas and nays being ordered, the question was decided in the affirmative: Whole number of votes cast, 16; necessary for adoption, 11; yeas, 16; nays, 0. All the Directors voted in the affirmative except the President and Vice-President, who abstained as required. So the By-Law is amended.

17) On motion of Mr. Jacobs, after discussion, unanimously VOTED that the Secretary of the League, upon request, furnish a Director a card copy pertaining to each member of his Division who fails to renew membership prior to expiration thereof.

18) Moved, by Mr. Hill, to direct the Secretary to request of the appropriate agency that the 3.5- and 14-Mc. 'phone subbands in the Canal Zone, Puerto Rico and the Virgin Islands be extended to correspond to those now in effect in Canada. After discussion, moved, by Mr. Brabb, to amend the motion to authorize U. S. domestic mobile operation similarly; but there was no second, so the motion to amend was lost. On motion of Mr. Martin, VOTED to amend the motion to refer the subject to the Planning Committee for its study and report to the Board. The question then being on the motion as amended, the same was unanimously ADOPTED.

19) Moved, by Mr. Hill, that until the 160-meter band becomes available to all amateurs both day and night, this

band be eliminated as a multiplier in the annual DX contest; but there was no second, so the motion was lost.

20) Moved, by Mr. Griggs, that the Board does hereby instruct the Secretary to request of the Federal Communications Commission adoption of a policy whereby the FCC will acknowledge receipt of license applications immediately upon receipt of same, by postal card, but, after discussion, the motion was rejected.

21) On motion of Mr. Griggs, unanimously VOTED to adopt the following: BE IT RESOLVED that the Board of Directors does hereby commend Walter E. Bradley for his untiring efforts as technical consultant to League members.

22) Moved, by Mr. Middelton, that the ARRL, through its Headquarters staff, establish and publicize a policy on TVI by means of a nation-wide educational program directed at TV manufacturers, TV installers, servicemen and repairmen, and TV set users; such a program to be implemented by suitable printed literature for wide distribution to these groups, together with TV films, radio scripts, newspaper publicity, and other media that will assist said program to be carried to all TV users and builders, with a view at reducing TVI complaints against radio amateurs. Moved, by Mr. Brabb, to amend the motion to the extent that any League employee who does not follow this policy be summarily required to submit his resignation; but there was no second, so the motion to amend was lost. Moved, by Mr. Martin, to amend the motion by striking out the text and substituting the following: in view of the present action being taken by the Headquarters staff, that the Headquarters staff organization continue their present TVI elimination program to the maximum extent possible. Moved, by Mr. Brabb, that the motion to amend be amended by substituting for the text the following: that the League carry on through *QST* an open and aggressive campaign to combat TVI caused by poorly-designed TV receivers; but there was no second, so the motion to amend the amendment was lost. The question then being on Mr. Martin's motion to amend, the same was rejected. There followed an extended discussion of this matter, in which everyone participated. Moved, by Mr. Dosland, to amend the motion by striking out the text and substituting the following:

> BE IT RESOLVED: the Board takes cognisance of the widespread misunderstanding of the television viewing public throughout the country concerning the causes of interference to television reception and the misleading character of much of the blame heretofore and now being falsely ascribed to amateur stations.
>
> Accordingly, the Board expresses the approval of the work heretofore performed by the Headquarters staff; and further directs the staff to expand and extend its program in an aggressive and coöperative manner to the end that public education, improvement in television receiver design and other remedial measures may eliminate controversy between amateurs and the television viewing public.
>
> The Board further recommends to the attention of the staff the various specific measures orally suggested by each Director at the present meeting.

Moved, by Mr. Brabb, to amend the amendment by deleting in the second paragraph the words "by the Headquarters staff"; but there was no second, so the motion to amend was lost. The question then being on the amendment proposed by Mr. Dosland, the same was ADOPTED. The question then being on the original motion as amended, the same was unanimously ADOPTED. During the course of the above action, the Board was in recess from 3:13 P.M. to 3:22 P.M.

23) The Board was in recess from 5:14 P.M. to 5:23 P.M.

24) Moved, by Mr. Middelton, that the Editor of *QST* be instructed to include in *QST*, at least quarterly, a section consisting of the equivalent of not less than two full columns of informative TVI data, modern and up to date authentic TVI-proofing procedures, TVI bibliography and the latest tips on what clubs and individuals can and should do when TVI strikes. Moved, by Mr. Hill, to amend the motion to provide that such space be taken from space normally occupied by station activity reports; but there was no second, so the motion to amend was lost. The question then being on the original motion, and the yeas and nays being ordered upon request, it was decided in the affirmative: Whole number of votes cast, 17; necessary for adoption, 9; yeas, 16; nays, 1. Every director voted in favor except Mr. Hill, who voted opposed, and the President, who abstained. So the proposal was ADOPTED.

25) Moved, by Mr. Middelton, that the Secretary and the Headquarters staff be instructed to organize and to carry out a genuine and intensive program to promote both the Novice and Technician Class of licensee and to provide this program with adequate and comprehensive enthusiasm together with full coverage in *QST*, and that the program be augmented by an especially prepared booklet outlining the full story of ham radio from a hobby standpoint, as viewed from the Novice standpoint, said booklet to be prepared for wide distribution to all types of youth organizations, veterans groups, schools and wherever such material would in any way stimulate the growth of the Novice movement. But, unanimous consent being given, the motion was withdrawn to be presented later in the meeting.

26) Moved, by Mr. Middelton, that this Board take proper action to form a VHF-UHF Department (comparable and equal in authority and scope to the present Technical Department) naming E. P. Tilton, *QST*'s able VHF Editor, Manager and to vest in Ed Tilton full authority and the responsibility, and to furnish him with adequate personnel and ARRL publication space, to properly organize and to administer the ARRL VHF-UHF program; said Manager Tilton shall be responsible and report to the ARRL Board of Directors; but, after discussion, the motion was rejected.

27) Moved, by Mr. Middelton, that the Secretary-Editor be instructed to provide additional full time editorial and technical personnel whose sole duties will be to prepare material and equipment to be used in ARRL publications, other than *QST*, or other monthly periodicals, in order to enhance *QST* by permitting the Headquarters staff to devote their full efforts and energies to it; but there was no second, so the motion was lost.

28) Moved, by Mr. Middelton, that the Editor of *QST* be instructed to make payment, upon acceptance, for solicited or unsolicited *QST* or other ARRL publications material (prepared by non-Headquarters staff personnel, at the rate of 5 (five) cents per word and $5.00 per photograph used, with a maximum of $50 per article for textual material. After discussion, the yeas and nays being ordered upon request, the question was decided in the negative: Whole number of votes cast, 17; necessary for adoption, 9; yeas, 3; nays, 14. Those who voted in the affirmative are Messrs. Griggs, Jacobs and Middelton. Every other director voted opposed, except the President, who abstained. So the motion was rejected.

29) On motion of Mr. Middelton, VOTED, 10 votes in favor to 4 opposed, that the Editor of *QST* be instructed to include in *QST*, and other ARRL publications, appropriate references or footnotes to articles in contemporary publications (such as *CQ* and *Radio News*) when such references would be of benefit to the ARRL publication reader.

30) Moved, by Mr. Middelton, that the Editor of *QST* be instructed to return the once familiar ARRL "guarantee" covering space-advertised products and place it in each and every issue of *QST*; but there was no second, so the motion was lost.

31) The Board was in recess for dinner from 6:33 P.M. to 8:10 P.M.

32) Moved, by Mr. Middelton, that the ARRL Technical Director be instructed to investigate or have investigated the technical accuracy of all claims made by manufacturer-advertisers (other than Ham Ads) and that ARRL publications space be denied to unsatisfactory products or products where claims are misleading or untruthful in the spirit as well as the letter of the intent; but there was no second, so the motion was lost.

33) Moved, by Mr. Middelton, that the Secretary of the ARRL publish in *QST*, at least yearly, a statement of the number of Full ARRL members in the U. S. and possessions, together with a statement of the number of licensed amateurs in the U. S. and possessions as given by the FCC data. The yeas and nays being ordered upon request, the question was decided in the negative: Whole number of votes cast, 17; necessary for adoption, 9; yeas, 5; nays, 12. Those who voted in favor were Messrs. Brabb, Griggs, Jacobs, Middelton and Noble. Those who voted opposed were Messrs. Canfield, Dosland, Hill, Hughes, Johnston, Keyes, Marriner, Martin, Matejka, Reid, Roberts and Groves. The President abstained. So the proposal was rejected.

34) At this point, the Secretary reported to the Board the results of his study, directed by the Board at its 1950 meet-

ing, of the feasibility of establishing a so-called technical scholarship, to be sponsored by ARRL. Moved, by Mr. Middelton, that the ARRL sponsor a "Technical Scholarship" which will lead to a year's paid employment at ARRL Headquarters in the ARRL laboratory, for an amateur who has not yet reached his 21st birthday, and who in the decision of the judges (to be selected by the Board of Directors) has most clearly demonstrated his inherent ability, interest and enthusiasm toward the hobby of amateur radio, through his all-round amateur performance for the year 1951, such "Technical Scholarship" to be a continuing affair with yearly awards and job-offers made to the winners; but the motion was rejected.

35) Mr. Canfield read the report of the Committee to study the Advisability of Creation of Three Standing Committees, and upon his motion the Board ADOPTED the following resolution:

BE IT RESOLVED, that there be created, and by adoption of this resolution there is created, a permanent committee to be known as the "Policy and Review Committee", with the following requirements as to membership and duties:

(1) The committee shall be composed of five directors automatically becoming committee members as their turn comes alphabetically by divisions.

(2) The first committee shall be composed of the directors from the first five ARRL divisions numbered in alphabetical order, and thereafter two members shall be replaced in even numbered calendar years and three members replaced in odd numbered calendar years. The new members shall be those next in line by alphabetical designation of divisions. Terms shall be considered as running between regular annual board meetings, regular terms being two years more or less depending on date of board meetings.

(3) No member shall hold office more than two consecutive terms, and a lapse of one year (board meeting to board meeting) shall elapse before any reappointment of member may be made.

(4) Vacancies in the committee shall be filled by appointment by the president for unexpired term only of disqualified directors, from list of eligible directors not holding membership on the committee.

(5) Duties and responsibilities of the "Policy and Review Committee" and other qualifications and procedure shall be fixed by the board of directors, and until modified or amended by majority vote of the directors, shall conform to the suggested duties and procedure outlined in report of committee recommending creation of the "Policy and Review Committee."

36) On motion of Mr. Canfield, after discussion, VOTED that this Board of Directors adopt the policy of making appropriations for Directors' administrative expenses for the year in which the appropriations are authorized, and that such appropriations be made from the net operating revenues of the year for which appropriated, and appropriations made at the Board Meeting shall date back to the first of the year. During the course of the above action the Board was in recess from 8:52 P.M. to 8:59 P.M.

37) On motion of Mr. Canfield, unanimously VOTED, after discussion, to adopt the following resolution:

BE IT RESOLVED, that the General Manager be, and hereby is, instructed to prepare a statement of estimated revenues and expenses and submit to the members of the Board 30 days before the annual meeting of the Board, with a revised estimate, if necessary, to be submitted at the Board Meeting.

38) Moved, by Mr. Brabb, that every copy of *QST* placed on newsstand sale contain a tear-out application for membership. After discussion, moved, by Mr. Marriner, to amend the motion to include the card in both regular membership and newsstand issues of *QST*; but the motion to amend was rejected. On motion of Mr. Canfield, VOTED to amend the motion to provide that such a card be included beginning with the earliest practicable issue and thereafter included in every other issue for 12 months. The question then being on the motion as amended, the same was ADOPTED.

39) On motion of Mr. Brabb, unanimously VOTED that the Communications Department investigate the feasibility of issuing its various certificates of appointment and merit in uniform dimensions as will fit standard size picture frames.

40) Moved, by Mr. Brabb, that the League press for immediate ratification of the treaty permitting mutual mobile operating privileges in U. S. and Canada; but there was no second, so the motion was lost.

41) Moved, by Mr. Brabb, that the League request modification of amateur regulations for keeping of amateur mobile logs to the extent that the recording of exact time and location of the mobile station may be omitted; but, after discussion, the motion was rejected.

42) Moved, by Mr. Brabb, that the League initiate action with the FCC for the prompt release to amateurs of all the frequency spectrum of 1800 to 2050 kc.; but, unanimous consent being given, the question was deferred for consideration with the report of the Planning Committee.

43) The Board recessed at 9:55 P.M., under order to reassemble at 9:30 A.M. on the morrow. The Board reassembled at the same place on May 12, 1951, and was called to order by the Chair at 9:45 A.M., with all directors and other persons hereinbefore mentioned in attendance.

44) At the request of Director Canfield, the Chair read the "President's Box" items appearing in the September and November 1927 issues of *QST*, entitled "The Reason Why" and "Representative Government" respectively, by Hiram Percy Maxim.

45) On motion of Mr. Brabb, unanimously VOTED at 9:54 A.M. that the Board does now resolve itself into a Committee of the Whole. The Chair appointed himself Chairman of the Committee of the Whole. The Board, sitting as a Committee of the Whole, was in recess for luncheon from 12:32 P.M. until 1:35 P.M. The Committee arose at 1:36 P.M. and Mr. Bailey, as Chairman of the Committee, laid before the Board the report of the Committee. On motion of Mr. Dosland, VOTED to adopt the following resolution:

WHEREAS, there has existed for many years a warm and cordial relationship between the amateurs of the United States and those of Canada; and,

WHEREAS, this relationship is a further demonstration of the unique relation in international affairs which exists between the peoples of Canada and the United States of America; and,

WHEREAS, there has existed for many years a practical working understanding between United States and Canadian amateurs whereby the 'phone sub-allocations in Canada have been not more than 50 kc. additional to the United States sub-allocations in the 75- and 20-meter bands; and,

WHEREAS, the Board of Directors of the ARRL recognizes fully the right of Canadian amateurs to request of their Government any 'phone sub-allocation they may desire; and,

WHEREAS, the practical working understanding referred to above appears to have been successful in practice;

NOW, THEREFORE, BE IT RESOLVED by the United States members of the Board of Directors of the ARRL that they appeal to their Canadian brother-members, through the Canadian General Manager, their elected representative, to institute appropriate procedures to request the Canadian regulatory authority to modify the radio-telephone sub-allocations to conform to the principles long heretofore outstanding and described in this resolution.

Every director voted in favor of the motion except the Canadian General Manager and the President, who abstained.

46) Moved, by Mr. Brabb, to amend paragraph 10 of Article IV of Constitution to read as follows: There shall be an Executive Committee consisting of the officers of the League and two directors who shall be duly elected at any regular board meeting by a majority of the directors of the League. This committee shall act in the place instead of the Board of Directors during the intervals between meetings of the Board. Any action taken under this section shall be promptly reported to the Board and shall be subject to approval of the Board at its next subsequent meeting. After

discussion, the yeas and nays being ordered, the question was decided in the negative: Whole number of votes cast, 16; necessary for adoption, 11; yeas, 3; nays, 13. Messrs. Brabb, Griggs and Middelton voted in the affirmative. Every other director voted in the negative except the President and Vice-President, who abstained as required. So the proposal to amend was rejected. Messrs. Dosland, Hill, Keyes, Marriner and Roberts requested that it be noted in the minutes the reason for their negative vote was their belief that the expense involved under the proposal is inconsistent with the benefits which might be derived.

47) At this point, Mr. Canfield reported briefly for the Finance Committee.

48) On motion of Mr. Dosland, VOTED that this Board continue in session until all business to come before it shall have been disposed of.

49) On motion of Mr. Keyes, VOTED that the Secretary be and hereby is instructed to pay directly or reimburse division directors for their necessary travel and subsistence expenses incurred by them in attending the 1951 Board Meeting, and pay all other necessary expenses of such meeting, the total of such expenses to be a charge against 1951 net operating income, the total amount authorized to be paid not to exceed six thousand dollars ($6,000).

50) On motion of Mr. Canfield, unanimously VOTED that the Secretary be and hereby is instructed to restore to surplus amounts appropriated by the Board at its 1950 regular meeting to cover administrative expenses of directors for the year 1951; and to provide for payment of 1951 administrative expenses of directors, the Secretary is authorized and instructed to reimburse and pay division directors actual expenses incurred by them at the proper administration of ARRL affairs in their respective divisions but not to exceed amounts as listed herein:

Canadian General Manager	$350
Atlantic Division Director	400
Central Division Director	750
Dakota Division Director	500
Delta Division Director	500
Great Lakes Division Director	800
Hudson Division Director	700
Midwest Division Director	650
New England Division Director	300
Northwestern Division Director	700
Pacific Division Director	500
Roanoke Division Director	300
Rocky Mountain Division Director	400
Southeastern Division Director	200
Southwestern Division Director	900
West Gulf Division Director	850

Actual administrative expenses paid by the Secretary in accordance with this motion shall be a charge against net operating income for 1951.

51) On motion of Mr. Canfield, unanimously VOTED that the Secretary be and hereby is instructed to restore to surplus the unexpended remainder, as of December 31, 1950, of the appropriations made by the Board at its 1950 regular meeting for the expenses of the Planning and Finance Committees; and that the Secretary be and hereby is instructed to reimburse and pay expenses of the Planning Committee for the year 1951 not to exceed the sum of two thousand dollars ($2,000) and the Finance Committee not to exceed the sum of two hundred dollars ($200) and the Policy and Review Committee not to exceed the sum of three hundred dollars ($300) and that such actual expenses shall be a charge against net operating income for 1951.

52) On motion of Mr. Canfield, VOTED, that the Secretary be and hereby is instructed to restore to surplus the unexpended remainder, as of December 31, 1950, of the amounts appropriated by the Board at its 1950 regular meeting to cover expenses for travel of SCMs and QSL Managers; and that the Secretary be and hereby is instructed to pay directly or reimburse at the rate of 7½¢ per mile or actual rail or bus fare, Section Communications Managers and QSL Managers of the League, applicable within the continental limits of the United States and Canada only, for the year 1951, as follows: (1) SCMs to attend one official ARRL Convention within their respective Divisions. (2) Within ARRL Sections in the continental limits, SCMs to attend in their own Section, in addition to the above, no more than five major ARRL Section organization meetings per year, to include hamfests only if sponsors schedule an ARRL Section organization meeting. (3) QSL Managers of the League to attend one official ARRL Convention within their respective call areas, provided that, where such convention is more than 500 miles from the QSL Manager's residence, reimbursement for travel expense, as provided below, shall not be for more than a total round trip of 1,000 miles. A designated Full Member may be authorized and subsequently reimbursed under these provisions to represent the SCM and speak for him at meetings (1) or (2) as above, provided the SCM has the advance concurrence of the Director concerned and the Communications Manager and gives written approval to such substitution. In the case of newly-elected SCMs, if five meetings for their Section have already been reimbursed, they may, on getting written approval of their Director and the Communications Manager, attend specific proposed additional (but not more than three such) Section organization meetings. That reimbursement be made in the above at the rate of 7½¢ a mile via the shortest commonly-traveled route if personal transportation be used. In (1) and (3) expenses may include one night's hotel accommodation at actual cost but not to exceed four dollars ($4.00) and the convention registration fee. All allowances for expenses shall be subject to approval by the Communications Manager in the case of the SCMs, and by the Secretary in the case of QSL Managers, of a report submitted with the itemized request for reimbursement, covering the representation of ARRL, reporting attendance, meeting discussion, questions, recommendations, or QSLs distributed, etc., by the individual attending the meeting. The total amount covered by this motion shall not exceed three thousand dollars ($3,000). Such actual travel expenses shall be a charge against net operating income for 1951.

53) On motion of Mr. Canfield, VOTED, that the Secretary be and hereby is instructed to restore to surplus the unexpended remainder, as of December 31, 1950, of the amounts appropriated by the Board at its 1950 regular meeting for travel expenses of Section Emergency Coördinators throughout their respective sections in the United States and Canada, and that the Secretary be and hereby is instructed to pay directly or reimburse, at the rate of 7½¢ per mile or actual rail or bus fare, Section Emergency Coördinators to a maximum of ten trips each per year per section, throughout their respective sections in United States and Canadian territory only, for the purpose of close contact with Emergency Coördinators and through meetings, selling clubs and individuals on the necessity for Emergency Corps work, and contacting duly constituted civil defense officials, relief and appropriate local agencies, subject to submission and approval of a full report to the Communications Manager; if one SEC replaces another and the section quota of trips has been exhausted by his predecessor, he may with a written concurrence of his Director and the Communications Manager request advance approval of subsequent reimbursement for specific travel (but not more than five trips) under the provisions above. The total amount covered by this motion shall not exceed two thousand five hundred dollars ($2,500). Such actual travel expense shall be a charge against net operating income for 1951.

54) On motion of Mr. Canfield, VOTED, that in case the actual expenditures against appropriations authorized for the Board meeting of 1951, administration expenses of Division Directors for the year 1951, expenses of Committees for the year 1951, expenses of SCMs and QSL Managers for the year 1951, and expenses of Section Emergency Coördinators for the year 1951, exceed the net operating income for the year 1951, the Secretary is instructed and authorized to charge the deficiency to surplus.

55) The Board was in recess from 3:25 P.M. to 3:31 P.M.

56) Moved, by Mr. Dosland, that hereafter it be the sense of the Board that all authorizations for expenditures made by the Board after net operating income shall not exceed the anticipated net operating income; but there was no second, so the motion was lost.

57) On motion of Mr. Johnston, unanimously VOTED that there is hereby appropriated from the surplus of the League the sum of $42.50 to cover expenses incurred by the Pacific Division Director during the year 1950 beyond the amount of the Pacific Division administrative appropriation for that year.

58) Turning now to the report and recommendations of the Planning Committee: Moved, by Mr. Noble, that the League's Secretary be instructed to request the Federal Communications Commission to establish 3750–3800 kc.

for A3 emission as an Advanced Class mobile sub-allocation (by "mobile" in this is meant "automobile" — either in motion or stationary — but with the regular mobile antenna and without external power supply). On motion of Mr. Marriner, VOTED, 9 votes in favor to 6 opposed, to amend the motion to open this band both to Advanced and General Class amateurs. After discussion, the question being on the motion as amended, the same was rejected; Messrs. Brabb, Hill, Johnston, Marriner and Middelton asked to be recorded as voting in favor of the motion. After further discussion, it being apparent that the majority was opposed to the proposal, on motion of Mr. Canfield, VOTED, 9 votes in favor to 6 opposed, to lay the matter on the table; Messrs. Johnston and Marriner requested to be recorded as opposed to tabling.

59) On motion of Mr. Middelton, after discussion, unanimously VOTED that the League's Secretary continue his efforts to get expansion of frequency privileges in the 160-meter band and to get whatever modifications of area are possible to enlarge night-time operations.

60) On motion of Mr. Johnston, after discussion, VOTED that the Secretary be instructed to request the Federal Communications Commission to permit frequency-shift-keying teletype operation on a non-exclusive basis on the frequencies 7250–7300 kc.; Mr. Reid requested to be recorded as not voting.

61) On motion of Mr. Griggs, unanimously VOTED that the Board does hereby request the Planning Committee to study the possibility of petitioning the Federal Communications Commission for the allocation of A3 emission on the 7-Mc. band.

62) On motion of Mr. Griggs, unanimously VOTED that the Planning Committee is hereby requested to examine the possibility of requesting the Federal Communications Commission for the allocation of those portions of the 1800–2000 kc. band presently available to amateurs for the operation of audio-frequency-shift keying so as to encourage the expansion of radioteletype operation by amateurs.

63) The Board was in recess from 4:24 P.M. to 4:31 P.M.

64) On motion of Mr. Dosland, VOTED, 12 votes in favor to 2 opposed, to take from the table the matter of a request to the Federal Communications Commission to establish an A3 mobile sub-allocation in the 3.5-Mc. band. Mr. Dosland moved the adoption of the original motion, as amended, but, on motion of Mr. Jacobs, after discussion, VOTED, 10 votes in favor to 6 opposed, to refer the matter back to the Planning Committee for further study.

65) On motion of Mr. Noble, unanimously VOTED, at 4:41 P.M., that the Board does now resolve itself into a Committee of the Whole. The Chair appointed himself Chairman of the Committee of the Whole, and at the request of the Board directed that all Headquarters officers and personnel retire from the meeting. The Committee rose at 7:10 P.M., whereupon, at the request of the Chair, Headquarters staff personnel rejoined the meeting. Mr. Bailey, as Chairman of the Committee, laid before the Board the report of the Committee recommending the adoption of the proposed new charter prepared by the League's General Counsel at the direction of the Constitution Revision Committee.

66) On motion of Mr. Roberts, unanimously VOTED that the salary of Communications Manager F. E. Handy be increased ten per cent, the limit permitted by the Wage Stabilization Board.

67) Moved, by Mr. Dosland, that the President and the Secretary of the League, on behalf of the Board of Directors and the members of the American Radio Relay League, Inc., execute and file with the Secretary of State of the State of Connecticut the amended articles of association of the American Radio Relay League now before the Board, such amended articles being in words following:

AMENDED ARTICLES OF ASSOCIATION

Be it known that we, the subscribers, do hereby associate ourselves as a body politic and corporate pursuant to the statute laws of the State of Connecticut regulating the formation and organization of corporations without capital stock and the following are our Articles of Association:

Article 1:

The name of our corporation shall be The American Radio Relay League, Incorporated. *Our corporation commenced its corporate existence as the American Radio Relay League, Incorporated, when its Articles of Association were approved by the Secretary of the State of Connecticut on January 29, 1915. The original Articles of Association were subscribed by Hiram Percy Maxim, Clarence D. Tuska and Lawrence A. Howard. The affairs of the corporation have since that time been continuously administered by a Board of Directors selected by the membership; and the present Directors, subscribers hereto, are the lawful successors and associates of the incorporators.*

Article 2:

The purposes for which our corporation is formed are the following: the promotion of interest in amateur radio communication and experimentation; the relaying of messages by radio without charge; the furtherance of the public welfare; the advancement of the radio art; the fostering and promotion of intercommunication by electronic means for the personal benefit of the members and without pecuniary gain; the fostering of education in the field of electronic communications; the dissemination of knowledge and information by electronic means; the printing and publishing of documents, books, magazines, newspapers and pamphlets necessary or incidental to any of the above purposes. No part of the assets or income of our corporation shall be the property of the members or any of them, but such assets and income shall be devoted exclusively to the purposes herein set forth.

Article 3:

The corporation is located in the town of West Hartford, County of Hartford and State of Connecticut and the address of the principal office is 38 LaSalle Road.

Article 4:

The name of the agent upon whom process may be served is A. L. Budlong and his address is 38 LaSalle Road, West Hartford, Connecticut or upon his successor as Secretary of the Corporation.

Article 5:

The affairs of this corporation shall be governed by a Board consisting of not less than five, nor more than seventeen Directors who shall be elected by the members for terms of two years. The present Board of Directors and the expiration date of the term of each Director, are:

Alexander Reid, 240 Logan Avenue, St. Lambert, P. Q., January 1, 1952
John H. Brabb, 417 Ford Bldg., Detroit 26, Michigan, January 1, 1952
Victor Canfield, P. O. Box 965, Lake Charles, Louisiana, January 1, 1952
Goodwin L. Dosland, Moorhead, Minnesota, January 1, 1952
John R. Griggs, 10412 Don Pico Rd., RFD 2, Spring Valley, Calif., January 1, 1953
Lamar Hill, 104 Myrtle, Cochran, Georgia, January 1, 1952
Kenneth E. Hughes, 810 W. Orange Avenue, S. San Francisco, Calif., January 1, 1952
William H. Jacobs, Route 6, Raleigh, N. C., January 1, 1953
Joseph M. Johnston, 423 Monmouth Avenue, Bradley Beach, N. J., January 1, 1953
Alvin G. Keyes, 1201 Merchants Nat'l Bank Bldg., Cedar Rapids, Ia., January 1, 1952
Wesley E. Marriner, 844 North Galena Avenue, Dixon 7, Ill., January 1, 1953
Walter Bradley Martin, 1033 Arbuta Road, Abington, Pa., January 1, 1952
Franklin K. Matejka, P. O. Box 212, Estes Park, Colo., January 1, 1953
A. David Middelton, 9 Kay Road, Tijeras, N. M., January 1, 1953
Percy C. Noble, 37 Broad Street, Westfield, Mass., January 1, 1953
R. Rex Roberts, 837 Park Hill Drive, Billings, Mont., January 1, 1953

Their successors shall be elected by mail vote in accordance with rules and regulations prescribed by the Board of Directors in the By-Laws. Directors may be elected to represent specific geographical areas as may from time to time be prescribed in the By-Laws. The Board shall meet annually during the first quarter of each year at a time and place to be fixed by the President upon at least forty days' notice. Special meetings of the Board shall be called by the President upon written request of at least one-half the membership of the Board as then constituted.

Article 6:

At the time of the election of each Director there shall also be elected a Vice-Director who shall have power of succession to the office of Director as hereinafter prescribed. No person shall be

(Continued on page 88)

Military Amateur Radio System

Military-to-Amateur Operation

Special QSL cards, acknowledging Armed Forces Day contacts with the headquarters radio stations of the United States Army, Navy and Air Force, have been mailed to more than 700 amateur radio operators in the United States. The three military stations — WAR, NSS and AIR — were on the air just outside the amateur bands for a six-hour period on May 19th as part of a military-to-amateur test. Amateur stations, calling from within the limits of their own bands, exchanged call letters and signal reports with the No. 1 headquarters stations of the three military services. Many stations were still "in line" waiting their turn to contact the military stations when the six-hour period ended.

Military coördinators of the amateur radio program for Armed Forces Day expressed their appreciation for the courteous coöperation received from amateurs who participated. A few instances were reported of amateurs moving over onto the military frequencies but a quick warning brought prompt action in all cases. It is hoped that next year additional operating time can be made available in order to accommodate more amateurs.

Receiving Competition

As this was written, final results of the Armed Forces Day Receiving Competition were not available; entries still were coming in. More than 500 already had been received, representing all sections of the U. S. and several maritime and overseas listeners.

Winners in the 25-w.p.m. copying contest will receive Certificates of Merit, attesting to their code-copying proficiency. Each certificate bears the signature of the Secretary of Defense, the Honorable George C. Marshall.

Judges for this event, representing all three services, are:

Army — Captain Lester A. Peterson, chief of MARS.

Air Force — Captain Charles C. Mack, chief of MARS.

Navy — Captain R. R. Hay and Commander E. L. Battey, Naval Reserve Liaison Section, Naval Communications Division.

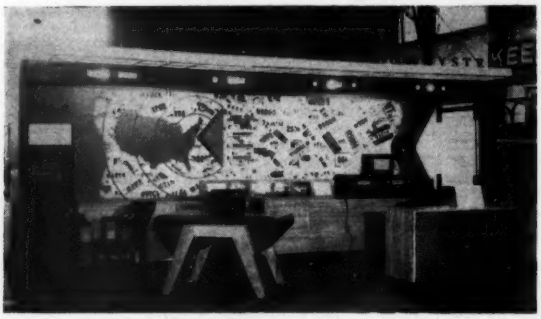
A complete list of winners in the Receiving Competition will be published in this department as soon as all entries are received and thoroughly checked.

Two-Meter Teletypewriter Demonstration Successful

As a local project in Washington, personnel of the MARS Headquarters constructed and operated a two-meter radioteletypewriter station at the national Armed Forces Day exhibition at Bolling Air Force Base.

Personal message traffic from visitors at the Armed Forces show was transmitted via the two-meter teletype link across the Potomac river to the Pentagon Building where it was promptly relayed by means of MARS Headquarters station facilities.

Chief credit for the demonstration belongs to Army and Air Force enlisted personnel who coördinated their efforts under the supervision of T/Sgt. Harry Simms (AF4HBD-W4HBD), chief operator at AIR-K4USA. A big assist was provided by radioteletypewriter enthusiasts among the amateur fraternity. Washington and Richmond, Va., amateurs loaned crystals, helped test equipment on the air, and furnished valuable advice in the construction and conversion processes.



The MARS display at the Armed Forces Day show in Washington, D. C., May 19th. The two-meter radioteletypewriter station at the extreme left handled more than 500 messages from visitors. Messages were filed and transmitted across the Potomac river to the MARS Headquarters stations in the Pentagon for relay.

A Bandswitching V.H.F. Converter and Harmonic Checker

Converting a Surplus TV Tuner for Use on 220, 144, 50 and 28 Mc.

BY EDWARD P. TILTON,* W1HDQ

• Man bites dog — hams use surplus TV tuners to monitor civil defense frequencies. Yes, here's real headline news: a complete-with-tubes 4-band v.h.f. converter for less than twenty dollars. And it's a sensitive harmonic indicator for any eight TV channels to boot!

THERE is something about receiver construction that usually stops the average ham. He will take on the job of building a kilowatt transmitter, complete with VFO and modulator, but the mere mention of receiver work sends him running for cover. The project outlined here is, however, simple enough for almost anyone. The result, a bandswitching converter for 220, 144, 50 and 28 Mc., and a choice of eight TV channels, for as little as $20.00, is a value not often equaled in these days of rocketing prices.

The basis for this bargain is the availability of large numbers of TV front-end units at surplus prices. Even if purchased new, these bandswitching front ends, usually supplied complete with tubes, can be had for less than the parts for a homebuilt unit would cost. The idea of converting them for v.h.f. ham band coverage was the brain child of Myron S. Friedman, W1WIS, of Dale-Connecticut, Inc., Admiral TV distributors of New Haven. The turret unit, the "Standard TV Tuner," used by Admiral and several other manufacturers, requires only the connection of filament and plate supply and a coaxial cable for the i.f. output to make it a converter for the TV channels.

Even in this form the gadget can be extremely useful for a ham in a television area. As a converter used ahead of a communications receiver capable of tuning around 21 Mc., it covers all the TV channels, providing a sensitive check on transmitter harmonics that may cause TVI.

Sensitivity is far better than that of most of the devices normally used for harmonic checks around a transmitter, and you can check the strength of your harmonic against any TV signals in your locality, thus getting a good idea of what you are up against in the way of a TVI-elimination problem. If it turns out that your harmonics are 40 db. or more below the TV signal (better check the S-meter calibration!) you can breathe easy. If the difference is less than this figure you have some shielding and filtering to do, though where the signal falls in the TV channel will have a lot to do with the severity of the interference.[1]

It is seldom necessary to monitor all 12 channels, so unused ranges of the tuner can be modified to cover several ham bands from 28 Mc. up. Except for the 10-meter coils, all those used in the conversion described here were made by altering some of the unused inductances. Replacement coils are available from TV distributors, so experimental work can be done without the fear of ruining an irreplaceable unit. Coil assemblies slip in and out readily, so the original twelve sets can be retained for TVI work, if needed, and additional coil sets obtained for conversion to ham band use.

The converted tuner is an Admiral type 94C18-4, probably the best bet for the job, if you can find one. An earlier model, Type 94C8-2 or 94A8-2, is a similar design, the later model having an improved contact design in the coil turret. The numbers given are Admiral designations; they may be different for other set manufacturers. Either model uses a 6J6 mixer-oscillator, and a pentode r.f. amplifier that can be a 6AG5 (used in the older models), a 6BC5, or a 6CB6. A 6AK5 may also be used, but the risk of oscillation troubles is greater.

The coil turret is in two sections, the forward one containing the oscillator, mixer grid, and r.f. plate windings, and the other the antenna coupling and r.f. grid circuit coils. The turret is cylindrical in form, and so arranged that lead inductance is practically nil. Thus it is possible to hit 225 Mc. with appreciable coil inductance, and reasonably good performance. The oscillator

A 4-band v.h.f. converter made from a Standard TV Tuner. An earlier model of the tuner is shown at the right.

* V.H.F. Editor, *QST*.

[1] "TVI Tips," June, 1949, *QST*, p. 44.

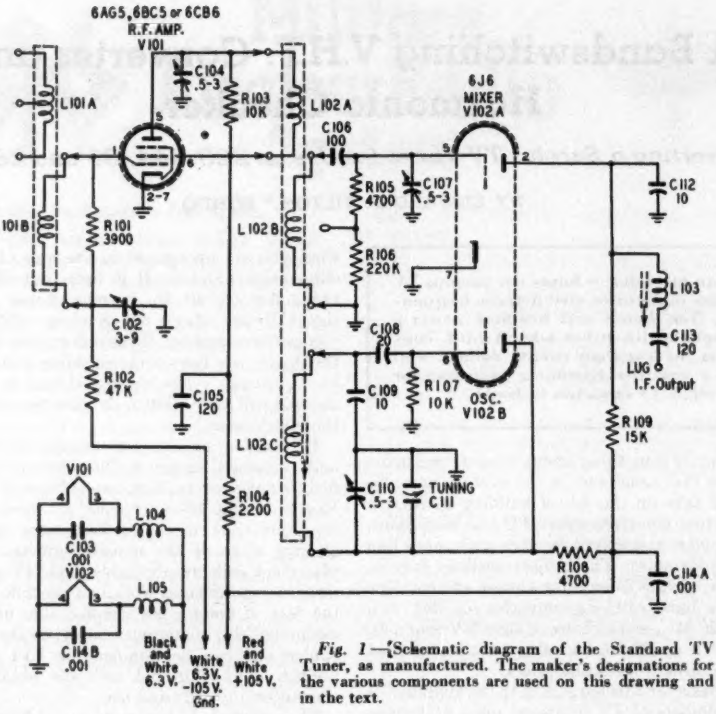


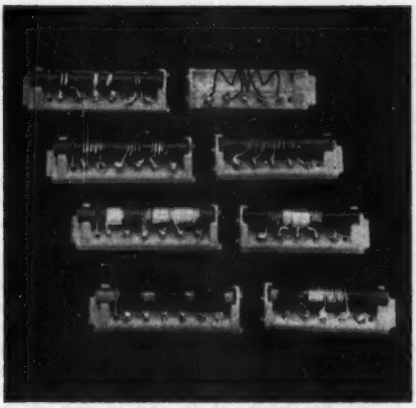
Fig. 1—Schematic diagram of the Standard TV Tuner, as manufactured. The maker's designations for the various components are used on this drawing and in the text.

winding has a small brass slug, the setting of which can be changed to line up the various bands to the same spot on the dial. Fine tuning is done with a bakelite rotor that is moved between the plate side of the oscillator and ground. It is designated as *C111* on the diagram, Fig. 1. Small padders are provided for the r.f. grid circuit, *C102*, the r.f. plate circuit, *C104* the mixer grid, *C107*, and the oscillator, *C110*. An adjustable slug tunes the i.f. output winding, *L103*. There is only one set of these adjustments, however, so the coils must be tailored to work with the same trimmer settings on all ranges. All r.f. circuits are broad-banded by resistive loading, so adjustment is not at all critical.

Conversion Procedure

It is suggested that the tuner be hooked up and checked on the TV channels before making any modifications. In this way one can become familiar with the operation of the unit before attempting to change any of the tuning ranges. The late-model tuner (94C18–4) has three leads coming through a grommetted hole near the i.f. output coil. A white lead is the a.v.c. connection to the r.f. amplifier. This can be grounded to the chassis, as a.v.c. will not be required for converter service. A white lead with black tracer is the hot filament lead, and a white-with-red is the B-plus. The older model (94C8–2 or 94A8–2) has a green tracer lead for the a.v.c. White is ground and the other leads are similar to the newer type. The older models have two i.f. output connections, for receivers that used separate sound and video i.f. amplifiers. The circuits of the two units are otherwise practically identical, and the procedure for utilizing them is similar. The i.f. output is taken off at a lug on the side of the chassis near the power leads. A coaxial cable, preferably not more than about two feet long, is connected to this lug, and the outer conductor grounded to the chassis. Connect up the power leads, run the coaxial line to the antenna terminals of a receiver capable of tuning from about 20 to 24 Mc., and you're ready to receive TV signals or transmitter harmonics. Operation of the fine tuning and the bandswitch will be easier if some knobs are provided. Drill a ⅜-inch hole in a large knob for the fine tuning, and use any small knob with a ¼-inch shaft hole for the bandswitch.

If your receiver tunes only to 18 Mc. you have one more job: padding the i.f. output winding so that it will resonate at that frequency or lower. This is a desirable step in any event, as the performance of most receivers is somewhat better as you move down from 21 to 16 or 17 Mc. It also helps to prevent mixer oscillation on 28 Mc. The change was made in the converter shown by mounting a 30-$\mu\mu$fd. ceramic padder inside the tuner chassis, adjacent to *L103*, and connecting it in parallel with *C112*. It is adjusted through a small hole drilled in the top surface of the tuner.



Amateur band coils for the converted TV tuner. The three windings on each of the four sets at the left are, left to right, oscillator, mixer grid, and r.f. plate. The two-winding coils, right, are for the r.f. grid and antenna coupling circuits. In order of frequency, reading up from the bottom row, they are for 28, 50, 144, and 220 Mc.

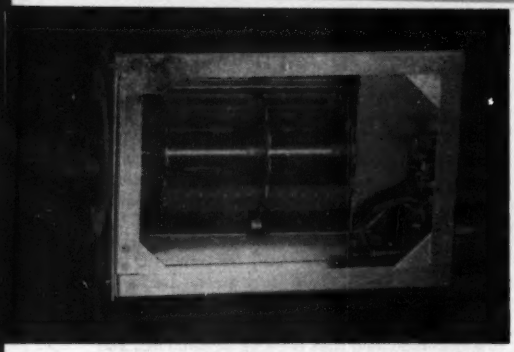
Apply the plate voltage (100 to 150 volts) and tune the receiver for maximum noise. The actual intermediate frequency used is not critical; wherever the noise peaks may be used, provided that there is about two megacycles of tuning range on either side. If a signal generator is available, the tuning range on the various channels can be checked. This will vary with the setting of the oscillator padder, *C110*. In tuners we've tested it has been about 700 kc. on Channel 2, increasing to about 1000 kc. on Channel 6. The high-band tuning range starts at about 2000 kc. on Channel 7 and increases gradually to 3000 kc. or more on Channel 13. This may be augmented, of course, by tuning the receiver over the required range. If you are interested in performance checks, 0.5 microvolt or less should give a 10-db. signal-to-noise ratio on the low channels, and about 2 microvolts will do the same on the high channels.

Now let's try the ham bands. Table I gives complete specifications for all the ham-band coils, so they can be made up from scratch, if one wishes to save the coil sets for the particular ranges that were used in our conversion process. We can start with 50 Mc., as that is the easiest to get working correctly, if the Channel 2 coil set is converted for this band. The oscillator winding, *L102C*, can be used by removing the brass slug and adding two turns to the inside end of the winding. If the slug is used for adjustment purposes at least two more turns should be added. It is recommended that the slug be removed, and the turns spread apart or squeezed together as required. Add two turns to the adjacent end of the mixer grid winding, *L102B*, and to the outside end of the r.f. plate coil, *L102A*. Add four turns to each end of the r.f. grid coil, *L101B*, leaving the primary, *L101A*, without change. With the coils altered in this manner, or a new set made according to the information in Table I, it should be possible to hear 50-Mc. signals if there is local activity.

Alignment can be done without the aid of signals, if necessary, so long as some source of calibration is available. This can be a crystal-oscillator harmonic, the radiation from a receiver oscillator, a signal generator, or any other signal source by which a known frequency close to 50 Mc. can be established. Set the receiver so that 50 Mc. is tuned in with the fine tuning near the maximum setting, then peak the i.f. adjustment (the stud in *L103*, or the ceramic padder mentioned earlier) for maximum noise. Adjust the trimmers *C107*, *104* and *102* for maximum noise, and the converter is ready for 50-Mc. work. If any of the trimmers peak near their maximum or minimum settings it will be necessary to adjust the coil inductances accordingly, to bring the peak near the middle of the trimmer tuning range. Bear in mind that these trimmers will affect all coil ranges, so the coils in each must be tailored to allow the trimmers to be set at the same position for all. The trimmer adjustments are very handy in the initial phases of the coil

TABLE I
Coil Information for the Converted TV Tuner

	28 Mc.	*50 Mc.*	*144 Mc.*	*220 Mc.*
Antenna, *L101A*	20 t. No. 26 d.s.c. center-tapped. Wind over *L101B*.	10 t. No. 22 e. close-wound, or Channel 2 with no change.	4 t. No. 26 d.s.c. inter-wound in *L101B*, center-tapped, or Channel 7 with no change.	2 t. No. 22 e., center-tapped. Mount at center of *L101B*.
R.F. Grid, *L101B*	No. 30 d.s.c., 1⅛ in. long.	28 t. No. 26 d.s.c. or add 4 t. to each end of Channel 2.	8 t. No. 22 e., ⅝ in. long, or add 1 t. each end of Channel 7.	4 t. No. 22 e., ⅛-inch dia., 1-inch long.
R.F. Plate, *L102A*	No. 32 e., 1⅛ inch long.	19 t. No. 26 d.s.c. or add 2 turns to outside end of Channel 2.	5 t. No. 22 e., ¼ inch long, or add 1 turn to Channel 7.	2 t. No. 22 e. sp. 1 dia., or remove 1 turn from Channel 13.
Mixer Grid, *L102B*	No. 32 e., 1⅛ inch long.	15 t. No. 26 d.s.c. or add 2 turns to Channel 2.	4 t. No. 22 e., ¼ inch long, or add 1 turn to Channel 7.	2 t. ⅛-inch copper strip, ⅛ inch apart, or spread turns of Channel 13.
Osc., *L102C*	No. 32 e., ¼ inch long, with slug.	14 t. No. 26 d.s.c. or add 2 turns to Channel 2.	5 t. No. 22 e., ⅛ inch long, or add 1 turn to Channel 7.	2¼ t. No. 22 e., sp. 1 dia., or remove ¾ turn from Channel 13, with slug.



Bottom view of the converter, showing the tuner turret with several sets of coils removed.

adjustment, however, as they indicate whether the inductance is too high or too low.

The coils for other ranges may now be made, and their inductance adjusted so that all will be peaked with the same trimmer settings. This is a fairly simple matter, as noise is a satisfactory indication of resonance, and the trimmers will tell you which way to change the coil inductance. If only the coils being worked on are left in the turret, it will be possible to squeeze or spread the turns, as required, without removing the coil assemblies for each operation. The procedure is the same in each case: set the oscillator inductance to bring one end of the band at the desired dial reading, then adjust the inductance of each other winding for maximum noise.

If this process results in nonuniform response across the band, the response can be flattened by peaking at the band center and then stagger-tuning at opposite ends of the band. As an example, the oscillator inductance can be set so that 28.5 Mc. comes at the desired spot near the low end of the fine tuning range. Then adjust the fine tuning control to about 29 Mc. and adjust the inductance of the mixer grid, r.f. plate, and r.f. grid windings for maximum response at this frequency. If the sensitivity falls off at either end of the band with this adjustment, tune up to 29.7 Mc. and peak one of the coils (for example, the mixer grid winding) at this frequency. Then tune down to the low end and peak another coil (the r.f. grid will do). A little juggling at both ends will insure a practically flat response.

It will be seen that in no case does the fine tuning cover an entire band. It is sufficient for a civil emergency band segment, however, and the i.f. can be reset for the other segment, or for coverage of the whole band in question. The converter pictured is set up so that 220, 144, 50 and 28.5 Mc. come near the maximum capacitance end of the tuning range. The coverage is then as follows: 28.5 to 29.1 Mc., 50.0 to 50.9 Mc., 144 to 146 Mc., and 220 to 224 Mc. Coverage of the high ends of the bands can be had by shifting the i.f. to a *lower* value, as required by the band in question. The fine tuning can be ignored, of course, and the i.f. tuned in the same manner as would be employed with a crystal-controlled converter.

The Completed Converter

For the purpose of adjustment, no mechanical work other than that previously mentioned need be done, but a convenient and smooth-working converter can be made by mounting the tuner in a chassis and equipping it with a suitable dial and knob. We also added a voltage regulator, antenna terminals, and detachable coaxial and power cables, as seen in the photographs. The dial was made by taking apart a National type O dial, adding a white card the size of the dial plate, between it and the knob. The calibration was marked on the card in pencil and then inked in with India ink. The knob was drilled for the ⅜-inch fine tuning shaft, and an area at the center was recessed on a lathe to take a small bar knob that acts as a bandswitch position indicator. The lathe operation is a finishing touch for appearance only, and is not necessary if no lathe is available. The fine tuning and bandswitch shafts need only be cut to a suitable length to take care of almost any knob combination.

The chassis is 5 by 7 by 2 inches, with the top surface cut out to permit mounting the tuner.

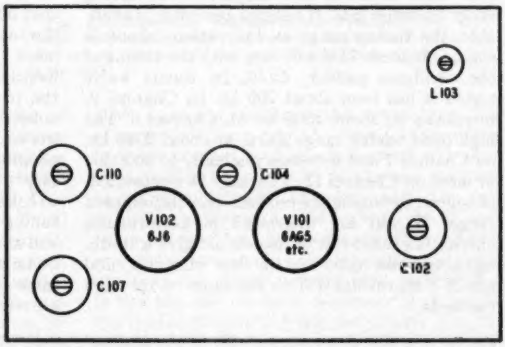


Fig. 2 — Top view sketch of the TV tuner, showing the location of the various adjustments.

Angle brackets were made from the piece of sheet aluminum cut from the top of the chassis. These are screwed to the sides of the tuner about 1⅞ inches down from the top. The front panel is about 4¾ by 5 inches in size. The VR-105 socket is at the back of the chassis, and antenna terminals and coaxial- and power-cable connectors are mounted in any convenient place on the rear wall.

Performance

As the converter employs a pentode r.f. stage, its performance does not approach the ultimate in low noise figures for the frequencies covered. It is quite good, however; at least the equal of

(Continued on page 100)

United States Naval Reserve

Special Consideration for Radio Operators

The Bureau of Naval Personnel has announced a revision of the conditions under which radio license holders may enlist in the Naval Reserve. Applicants for enlistment in Class V3 of the Naval Reserve, who hold radio licenses issued by the Federal Communications Commission, may be enlisted in accordance with Col. 2 of the following table. At any time following enlistment in the rate indicated in Col. 2, personnel may be examined and, when found to be qualified, may be advanced to the rate shown in Col. 3. These provisions apply only to Class V3. They do not apply to other volunteer classes of the Naval Reserve; nor are they applicable to the Organized Reserve or to personnel in active military service.

1	*2*	*3*
License Held	*Rate in Which Enlisted*	*Authorized Rate When Qualified*
Radio Telegraph-Commercial		
1st Class	Seaman	Radioman, second class
2nd Class	Seaman	Radioman, second class
3rd Class	Seaman	Radioman, third class
Radio Telegraph-Amateur		
Amateur Extra Class	Seaman	Radioman, second class
Advanced Class or Class A	Seaman	Radioman, third class
General Class or Class B	Seaman	Radioman, third class
Conditional Class or Class C	Seaman Apprentice	Seaman

Electronics Training for Enlistees in Regular Navy

Applicants for enlistment in the Regular Navy who wish to be sent to a technical or operational electronics school may apply for the "Electronics Field" Program. Applicants accepted for this program will be assured an opportunity of being sent to one of the service schools listed below, but not to a particular school:

Technical	*Operational*
Electronics Technician	Radioman
Fire Control Technician	Sonarman
Interior Communications Technician	Radarman
Communications Technician	Teleman

By passing an Electronic Technician Selection Test and being accepted for the Electronic Technician Training Program, an applicant may assure himself of attending the electronic technician school.

Further details on these programs may be obtained from your nearest U. S. Navy recruiting office.

Here & There

Add to list of amateurs in active military service: W6UWL/YKL (USMCR) and W6YLD (USNR). . . . After an absence of 20 years, Captain R. R. Hay, USN, Naval Reserve liaison officer, Naval Communications Division, has returned to the ham bands as W4LW in Arlington, Va. Dick originally held W1JC in Massachusetts, and was a charter member of the U. S. Naval Academy Amateur Radio Club — W3ADO. . . . Amateur radio activity at the Naval Academy is at an all-time high, with the following midshipmen operating W3ADO: W2FTJ, W2UZN, W3NII, W3NVT, W6KIH, W6KNG, W8FOK, W8YNZ, W9FFH, W9KJN, W9CAZ, and W9CNR.

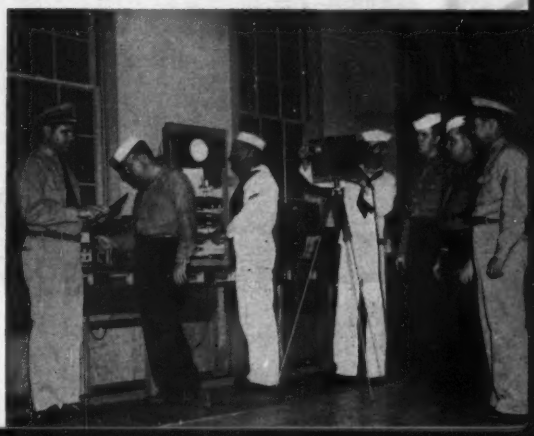
— • • • —

Volunteer Electronics Company 11-26 (K6NBI), Santa Maria, Calif., won the 1951 "Outstanding Unit Award" for the best electronics unit in the Eleventh Naval District. This outstanding organization is commanded by Lieut. Richard Clare.

— • • • —

Recent shifts in Naval Reserve Electronics Program personnel affect the following amateurs: Cmdr. H. D. Gibson (W7N8E) moves from Seattle to Fourth Naval District Headquarters, Philadelphia. . . . Cmdr. W. B. Martin (W3QV), who has been stationed at Philadelphia for several years, returns to inactive duty, effective July 1st. Lieut. Cmdr. R. B. Greenman (W2QLN) leaves New York to take

(Continued on page 98)



♦

Naval Reservists assembling an amateur television station at the Naval Reserve Training Center (K5NRG), Corpus Christi, Texas. *L. to r.*: C. W. Raetzsch, R. L. Flood, E. L. Brown, P. M. Cox, P. Wilson, R. D. Whitehill, G. E. De Vilbiss.

♦

How To Lay Out a Transmitter

The Elements of Radio Design

BY BYRON GOODMAN,* W1DX

A PROBLEM that confronts practically every amateur at one or more times during his career is that of laying out and wiring a piece of equipment. It may involve taking a circuit from a book or magazine and translating it into the finished article, or it may revolve around a minor modification or substitution in a piece of gear that has been described rather completely. The amateur would like to know what liberties he can take with the original design without letting himself in for a pack of trouble. Frankly, that depends upon how much radio theory and practice he knows, and the only way he can get the necessary background is through reading and actual construction. As with most hobbies, the more experience one has the less likely he is to run into trouble.

This business of layout and design couldn't possibly be covered completely in a single article, or in a single book for that matter. Among other things, a layout may depend upon the parts on hand, the allowable space for the unit, whether or not it is to match or tie in with other units, and the designer's personal preferences and prejudices. But certain basic considerations are involved in almost any piece of radio gear, and we will try to point out some of them in this article. We intend to do it by taking a simple transmitter as a concrete example and following it through, step by step. The same principles will apply to any piece of equipment, however.

* Assistant Technical Editor, *QST*.

[1] Mix, "A Two-Stage Transmitter for the Beginner," *QST*, April, 1950.

Modifying a Transmitter

Let us suppose, for example, that we have looked through a number of books and magazines for the design of a simple transmitter that we can use in the 80- and 40-meter bands. After looking them all over, we keep coming back to the transmitter described in the April, 1950, issue of *QST*.[1] Two views of it are repeated here, and the wiring diagram is shown in Fig. 1. We plan to use a 6L6 in the final, but we note with satisfaction that a 6V6 or 6F6 can be substituted, if we ever have to. We like everything about the design except that it doesn't provide for crystal switching, a feature we would like to incorporate for two reasons: quick QSY, and a handy storage space for our crystals.

The Circuit

Looking in the *Handbook* and back issues of *QST* at rigs where crystals are switched, we note that *both* sides of the crystal are switched wherever both sides of the crystal are "hot" (one side not grounded), so we plan to do the same thing. A catalog shows that rotary double-pole switches can be had with up to 11 positions, and that would be one limit to our design. Octal tube sockets can be used as sockets for two crystals each, or we can use a number of the special crystal sockets that are available. We decide that four or six crystals on the chassis at any time will give us enough choice of frequencies, so we plan to use two or three octal sockets for the crystals, whichever fits better into the layout. We decide on octal sockets over the special ones

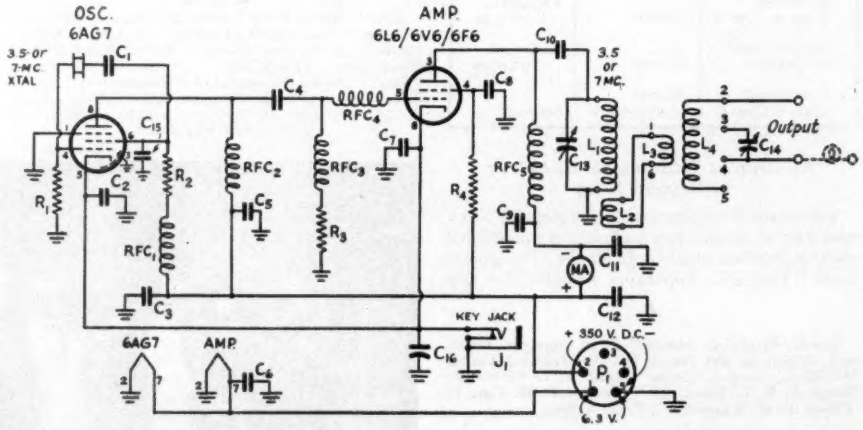


Fig. 1 — Circuit diagram of the original two-tube transmitter, as described in *QST*.

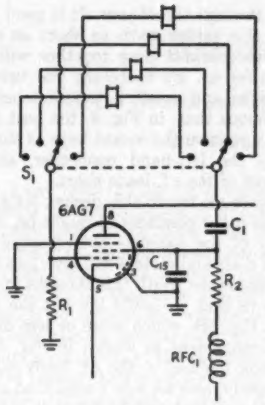


Fig. 2 — Necessary modification of Fig. 1 for crystal switching. S_1 is a two-pole wafer switch.

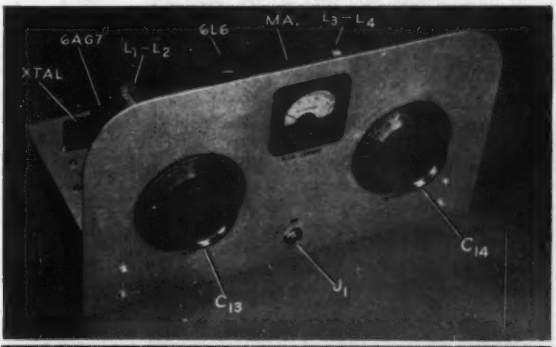
because of the price differential and the fact that we aren't trying to crowd everything into the minimum possible space.

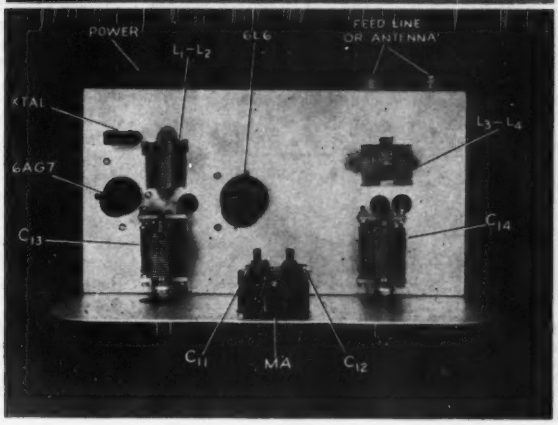
Our revised diagram, therefore, will be the same as in Fig. 1 except for a crystal switch, the detail of which is shown in Fig. 2.

The Layout

The next problem, of course, is how to fit the switch and crystal sockets on the chassis. Looking at the top view in the photograph, the first thing that comes to mind is that we could mount the switch on the left-hand side of the chassis at the rear, leaving the rest of the construction as before, with the exception of the switch and the extra crystal sockets. The switch knob would project out the side and could be reached easily in most cases, but we might not be able to see the switch position to check which crystal is in the circuit. So let's consider some other possibilities.

Looking at the photographs, we are struck by the symmetry of the front-panel view and the apparent lack of it in the top view. Symmetry or balance of parts on a chassis is not important from an electrical standpoint, but it often makes a unit look more finished or "engineered," so let's see what the possibilities are of making the top view pretty without spoiling anything. The first idea that comes to mind is that sketched in Fig. 3. By putting the key jack at the rear of the chassis, we can mount the crystal switch in the hole originally provided for the key jack, thus keeping practically the same panel layout. The crystal sockets will mount under the meter. This looks like a rather neat arrangement, until we start to consider some of the r.f. leads. The plate





Two views of the two-tube transmitter as originally described in *QST*.

circuit of the 6L6 amplifier — plate to C_{10} to C_{13} to ground to C_7 to cathode — should be made reasonably short if we can, and this particular arrangement would work against us. We could consider the plate circuit as plate to C_{10} to L_1 to ground to C_7 to cathode, and this would be

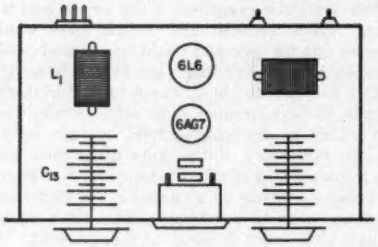


Fig. 3 — One idea for modifying the original layout, with the crystal switch mounted in the hole originally used for the key jack.

a fairly short path, but most hams get into the habit of thinking of it the first way, which is the right way on the higher frequencies. Actually, 3.5 and 7 Mc. are relatively low frequencies where we don't have to pay too much attention to r.f. lead lengths, but it is a good habit to think about them always, and they are an important consideration where TVI is involved. By keeping the r.f. leads short, particularly those that carry high r.f. currents, we will minimize the possibilities for harmonic radiation from the transmitter.

Not liking the lead lengths involved in the layout of Fig. 3, let's look at some other possibilities. The arrangement in Fig. 4 is certainly feasible. The switch would be mounted near the rear of the chassis and driven by an extension shaft to the front panel. This shaft would pass directly under the tube sockets and might make wiring a little difficult, but that's not too much of a problem. The 6L6 socket is now brought closer to the tuning condenser, and that makes us a lot happier.

We still haven't made up our mind, but let's think a little about tube-socket positioning. We have kept the two sockets together in Figs. 3 and 4 because it seems very logical — there are no tuned circuits between them to take up space, and in any capacity-coupled stages the current

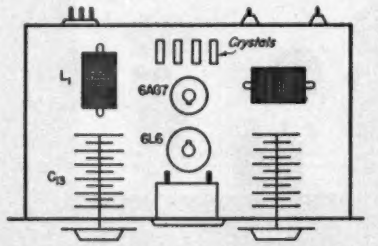


Fig. 4 — A slight revision of Fig. 3 that gives better r.f. leads.

return is through the chassis. It is good practice to make this return path as short as possible. Keeping the sockets close together will accomplish this for us. By sketching the tube-socket pin positions and rotating the sketches, it becomes obvious that, in Fig. 4, the best arrangement is to position the socket keys as shown and make C_{13} the left-hand condenser, since this makes most of the r.f. leads short.

But before we freeze this design, let's just see what some other possibilities might be. Absolute symmetry of the panel is not essential — good *balance* of dials and meters will give just as pleasing an appearance. With this thought in mind, it occurs to us that we could lay out the panel as shown in Fig. 5B, which more or less dictates a chassis arrangement as shown in Fig. 5A. This doesn't look too bad — the r.f. leads will fall in place properly, and we won't need that extension shaft on the crystal switch. While it is true that we have lost the symmetry of the chassis that originally started us on all this doodling, we have come up with a design that might be worth

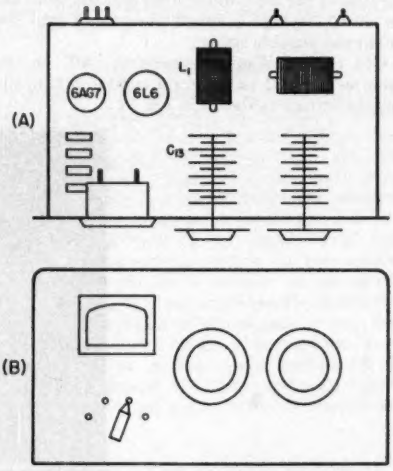


Fig. 5 — A different approach that gives a logical r.f. layout but destroys the panel symmetry. However, panel *balance* is retained.

while. We check it further by cutting out paper patterns to represent the dials, meter and crystal-switch knob, and juggle them around on a paper rectangle that represents the panel. The first thing we see is that by moving the left-hand tuning knob a little to the right of center we have better balance than as originally planned in Fig. 5B. This doesn't hurt the chassis arrangement in any way, of course. We could have used the dials themselves, instead of the paper dummies, but the meter can best be represented by paper because the meter itself won't lie flat on anything being used to represent the panel. In this revised arrangement, coils L_1 and L_4 are mounted at right angles to each other, so we don't have to

(*Continued on page 100*)

Keying the BC-696

Good Break-in Operation and Only One Antenna

BY HOLLAND M. CARTER,* W4ADE

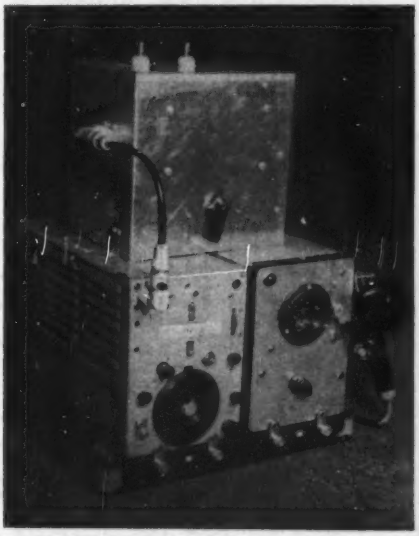
BEING away from the big rig, it was desired to operate portable 'phone and c.w. with a BC-696 and at the same time enjoy the good features of the behemoth back home. Keying was the first thought. But where to put an elaborate tube keyer on that little chassis? Not one more piece of equipment was wanted — the idea being to keep the rig compact and portable, yet preserve its good points of the calibration crystal and ease of tuning. And what about the relays in the BC-696? They operate on d.c. — leading to the problem of power for them. Any a.c. relays were out — too big and too expensive. One of two answers had to be chosen: either provide a d.c. supply for the relays and the T-17-D microphone, operating the filaments on a.c., or provide a d.c. supply for all three needs. The latter was decided upon, principally because of ease in changing to batteries for emergency operation.

Judicious shopping provided a nice d.c. supply at nominal cost. Included were a 15-volt 5-ampere transformer, a 12.5-volt bridge selenium rectifier, and a 6000-μfd. 18-volt filter condenser. The transformer consumed about 50 per cent of the cost, and was a necessity, anyway. The d.c. supply requirement can be met through the use of surplus or used trickle chargers, or by combining surplus dry rectifier with a transformer from the junk box. The filter condenser is not a necessity, but provides a little better regulation if you can get it. A recent article in the January, 1951, issue of *Popular Science*, page 211, is most enlightening on changes in selenium rectifiers; the ARRL *Handbook* is also indispensable. There are still plenty of good bargains in these rectifiers on the surplus market.

The BC-696 has two relays already on it, both for 24–28 volt d.c. operation. Rewiring the heaters for 12.5 volts was easy, since they only require being connected in parallel. The antenna relay coils are in series, so it is obvious they will work in parallel on 12.5 volts. The little d.p.s.t. relay on the side of the chassis controls the oscillator plate voltage and the 1625 cathodes. It was removed and its coil replaced with a spare coil from an extra antenna-type relay. This done, both relays operate nicely on 12.5 volts, and draw a total of 0.26 ampere. If no spare antenna relay is available, remove the control-relay coil winding and replace it with a full winding of No. 32 enameled wire.

So far, so good. Now — how to hold the oscillator plate voltage on and the antenna relay closed, with a delay arrangement such as the tube keyers have? The first requirement is a low-current relay that will operate from small condenser charges through a limiting resistor, to hold it on for a short time. Almost any relay with a coil resistance around 15,000 ohms and an operating current of 4 to 8 ma. will do. You might even scrounge a couple from the telephone company! In our case, being unable to procure one with d.p.s.t. contacts, two small Sigma low-current (s.p.d.t.) relays were used. One of these fits between the oscillator and eye tubes on the back of the chassis, and the other fits underneath the chassis at the back. A 20-μfd. 450-volt electrolytic condenser, three 1-watt resistors, a 0.1-megohm potentiometer and a 5-prong relay socket were also needed. The relay mounted underneath had its shield can and plug removed first and then was mounted with two screws directly to the chassis back.

Referring to the circuit in Fig. 1, it will be noted that one set of points ("B" of R_{21}) keys the 1625 cathodes and the "A" set keys the time delay net. The manual key or 'phone switch is inserted in the ground lead of this relay's coils as it comes out of the supply socket on the back of the chassis. This relay will take moderate code speeds nicely. A 0.2-μfd. 400-volt paper condenser



The reworked BC-696 of W4ADE, complete with modulator and antenna tuning unit. The knob at the left rear of the transmitter controls the "hold-in" time of the keying circuit. The receiving antenna terminal can be seen in the upper right-hand corner of the transmitter.

* Smoaks, S. C.

is shunted from the 1625 cathodes to ground, as close as possible to the sockets, to provide r.f. return. W4ADE has an auxiliary on-off switch on the front of the transmitter, a 'phone-operation switch wired to the T-17-D, and the key jack in parallel with both of these. Any one switch will operate the entire rig. Microphone current is also controlled by the button on the T-17-D.

It will be noted that the 300-volt supply is fed directly from "A" on R_{y1} to the junction of R_1 and R_2, where the current divides, a part of it actuating R_{y2} and R_{y3} (or one d.p.s.t. relay if you have it), and a part of the current going through limiting resistor R_1 to C_1 and R_3 and R_4. Here, R_1 performs the important functions of limiting the charging current to C_1, so that R_{y2} and R_{y3} will get enough current to close immediately and allow C_1 to charge at the same time. Remember that an uncharged condenser in a d.c. circuit acts as a direct short during a current surge. This must be prevented to minimize delay in closing R_{y2} and R_{y3}. During this process R_3 and R_4 take very little current to ground. R_3 and R_4 determine the discharge of C_1 and hence the holding time of R_{y2} and R_{y3}. Without them the charge of C_1 would have to leak off through R_1, R_2 and the relay coils, a resistance that is not so easily adjusted. In the circuit as shown, the adjustment of time delay is a simple matter of adjusting R_3. Current through R_{y2} and R_{y3} will hold them closed until the minimum actuating voltage point is reached as the charge on C_1 leaks off. The delay time is about one half second with R_3 set at minimum, and about two seconds with R_3 at maximum. Any small potentiometer will work here, since the current through it is quite low.

What measure of control is possible with this arrangement? The R_{y2} contacts control the 300-volt supply to the oscillator plate, and the R_{y3} contacts control the 12.5 volts to the antenna relay. We control the transmitter by time-delay control of these two relays. Note that the 300 volts for the oscillator plate does not go through R_{y1} but is run directly from the incoming supply line. If you substitute other type relays, keep them at a maximum operating current of 8 ma., and adjust R_2 so that the total resistance of this leg is 40,000 ohms. For positive operation, be sure that the relay contacts are clean.

Consider the sequence of operation:

1) Manual key or switch is depressed, closing R_{y1}.

2) Immediately R_{y2} and R_{y3} are energized and close.

3) A. Antenna relay closes to "transmit" position.

B. Oscillator plate gets applied voltage and starts oscillator.

4) Amplifier cathodes are grounded, and transmitter operates.

5) Condenser C_1 charges, beginning as R_{y1} closes.

6) Transmitter is keyed through R_{y1} and the 1625 cathodes. This continues as long as delay time is not exceeded, and keying or switching is in progress.

When operating is stopped:

1) R_{y1} opens, removing the charging current from C_1 and actuating current from R_{y2} and R_{y3}. The 1625 cathodes are disconnected.

2) R_{y2} and R_{y3} hold on for the time period determined by the setting of R_3, the oscillator remaining on and antenna relay closed, until the stored voltage in C_1 is exhausted below minimum operating point for R_{y2} and R_{y3}.

3) R_{y2} and R_{y3} open, stopping oscillator and opening antenna relay to the receiving position.

During the keying or switching process, C_1 is kept full by recurrent charging as the rig is keyed.

Good workmanship and a little care are all that are necessary to put the small parts under the transmitter — you don't have to be a watchmaker. The marker crystal connections were taken out separately to pin jacks on back of the chassis. Many articles have been written about the circuit and changes in the Command-series transmitters, so a discussion of that is avoided here.

Calculations on the delay net give 7.5 ma. through the low-current relays, which is

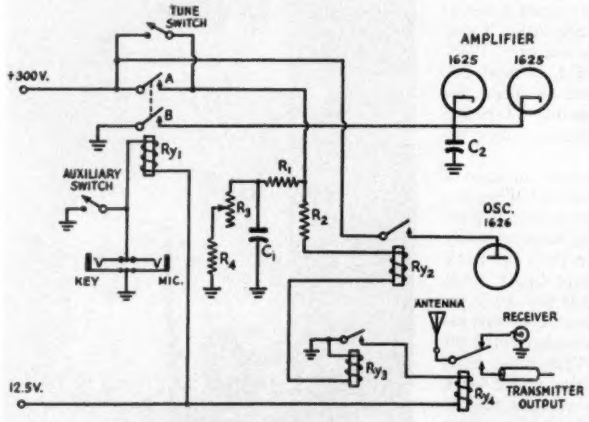


Fig. 1 — Circuit diagram of the BC-696 keying and control circuit. Amplifier keying is used, but the oscillator is turned on automatically and holds on for a period determined by the setting of R_3. The same antenna is used for transmitting and receiving.

C_1 — 20-μfd. 450-volt electrolytic.
C_2 — 0.2-μfd. 400-volt paper.
R_1 — 27,000 ohms, 1 watt.
R_2 — 20,000 ohms, 1 watt.
R_3 — 0.1-megohm potentiometer.
R_4 — 10,000 ohms, 1 watt.
R_{y1} — D.p.s.t. relay in BC-696, converted for 12-volt operation.
R_{y2}, R_{y3} — 10,000-ohm 6-ma. relay (Sigma).
R_{y4} — BC-696 antenna relay, modified (see text).

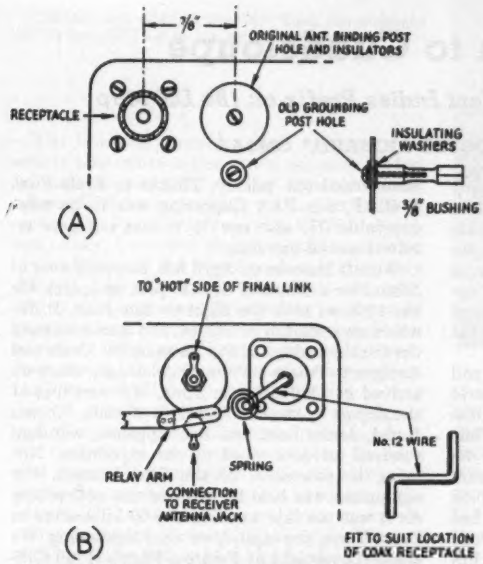


Fig. 2 — **Changes in the antenna terminals and relay for break-in operation. The front view in A shows the new coaxial fitting and the insulated transmitter terminal. The back view, B, shows the modification details.**

not excessive for the popular 6-ma. relays and provides positive actuation. The author uses four VR-150s in series-parallel for voltage regulation of the 300-volt supply, because all voltages are taken from a common plate transformer. Regulation is not a must, but it is worth the trouble. Standing current on the regulator tubes is 60 ma. total, or 30 ma. per tube. The screen supply for the 1625s is handled through a 50,000-ohm 10-watt wire-wound resistor.

Antenna Relay

To permit the use of a common antenna, the following changes must be made in the antenna relay:

1) Remove the contacting spring from its supporting arm, then remove the arm permanently from the antenna coil support.

2) Remove the antenna binding post and parts — and save them.

3) Remove the other silver post just under the binding post — save it.

4) Measure ⅞ inch from the center of the binding-post hole toward the left edge, facing the front of the rig. Mark this point and keep it level with the center of the binding-post hole. Drill and enlarge at this point to fit an Amphenol 83-1R chassis receptacle. Install the receptacle.

5) Using the binding-post insulators, remount one silver post with a machine screw as shown in A of Fig. 2.

6) Ream out the former grounding-post hole under the binding-post hole, to fit a pair of insulating washers. Mount this post with the washers.

7) Cut off a ¾-inch piece of No. 12 tinned solid copper wire. Bend it at ¼ inch from each end to form the shape of a crank. Solder into the coax fitting, and mount the contact spring as shown in B of Fig. 2.

8) Use RG-59/U coax cable to take out the receiving lead as desired. A car-type radio antenna jack and plug are suggested.

There is no need to remove the transmitter antenna loading coil permanently unless you so desire. A short piece of RG-59/U is used to connect the final tank link to the antenna relay contacts. Otherwise, no changes are made in the transmitter.

The total cost of the control system itself was $3.00. The d.c. supply was considered a necessity, since it was needed also for microphone voltage, and the rig was arranged for auxiliary 12-volt operation. This makes emergency operation a natural. The T-17-D supply is filtered through a small choke and a 25-μfd. 25-volt condenser from a BC-375E transmitter. Any small filter choke capable of 75 ma. or more will do as a substitute. A 200-ohm wire-wound potentiometer provides for adjustment of the microphone current, which runs about 50 ma. here.

Break-in is excellent with this system on both 'phone and c.w. The cost is extremely low — the keying characteristic excellent. It's easy to install — and you can sit back with pipe or cigar and operate away without breaking an arm or your back throwing switches. Oh, yes — it applies to almost any kind of rig if you have the requirements.

Silent Keys

IT IS with deep regret that we record the passing of these amateurs:

W1PXF, Norman E. German, Windsor, Vt.
W1VH, Capt. Henry W. Wickes, jr., USNR, Newton Center, Mass.
W2GX, Russell D. Valentine, Bayside, L. I., N. Y.
W4CFT, Charles H. Grant, Atlanta, Ga.
W4FJB, Clifton Walker, Atlanta, Ga.
W5AHJ, James M. Morris, Victoria, Texas
W6WLF, Leonard R. Strader, San Diego, Calif.
W8VZZ, John A. Howell, Detroit, Mich.
W9AIA, Oscar D. Hachoogain, Racine, Wis.
W9CMU, W. A. Fleming, Rockford, Ill.
W9QYO, Carl R. Mickelberg, Aurora, Ill.
WØGWV, Bendix J. Stiedeman, Clinton, Iowa
WØRGE, John D. Stock, St. Louis, Mo.
G3DLB, Philip H. Draycott, Knotty Ash, Liverpool
G8IW, F. G. Whinfrey, Woodhouse, Sheffield
G8UZ, A. J. Marriott, Sutton-in-Ashfield, Nottingham
ex-KA1GR, George L. Rickard, Manila
VK4AR, George S. Hamilton, Toowong, Queensland
VK4ER, Eric H. Reilly, Laidley, Queensland
VK4WA, W. J. Goldsworthy, Rockhampton, Queensland
VU2DM, Dr. N. S. Subba Rao, Waltair, South India

DX-pedition to Guadeloupe

Putting a Rare French West Indies Prefix on the DX Map

BY WALTER WOOSTER RICHARD,* CM9AA

BEING enthusiastic DX chasers, my wife Lily (CM2AC) and I decided last year that it would be an enjoyable experience to operate as rare DX. After studying a map and the Countries List, we settled on Monaco and Andorra as being tempting possibilities. Permission to operate from Monaco came with a minimum of difficulty. Unfortunately, inquiries revealed that the Andorra picture was not as favorable.

We were all ready to leave for Europe and 3A2-land when the unexpected turn of world events made a change of plans desirable. Our disappointment was short-lived, however. While rag-chewing with Charlie Mellen, W1FH, he suggested, "Why not go to Guadeloupe, a rare DX spot right near your back door? Chuck Bolvin, W4LVV, of Pan American Airways, has been down there for a couple of days and can give you all the information necessary." I immediately got a message off to W4LVV who obligingly sent us all the pertinent dope.

After three months of correspondence with the Directeur of Postes-Telegraphes-Telephones of Guadeloupe, we received a letter on April 6th stating that our call would be in the bracket FG7XA-XZ but that we must give our address at Guadeloupe before a license could be issued.

Lily and I promptly gave consideration to the equipment, antennas, spares, tools, etc., which would be needed. For a transmitter, we decided on our homebuilt 50-watt rig consisting of a 6L6 oscillator-807 final, 6AC7 speech-p.p. 6L6s modulator. Accessories included 14 crystals, a Lysco miniature ECO, and folded-dipole antennas for 10, 20 and 40. A Hallicrafters SX-71 receiver was selected because of its performance and light weight. In all, we had 178 pounds of excess baggage

Transportation to Guadeloupe was the next problem to be met. We contacted Pan American Airways in Havana and Miami and all details were ironed out quickly. Thanks to Ernie Foss, W4LRP, our PAA Clippering was to be most enjoyable. He also saw to it that our gear received special handling.

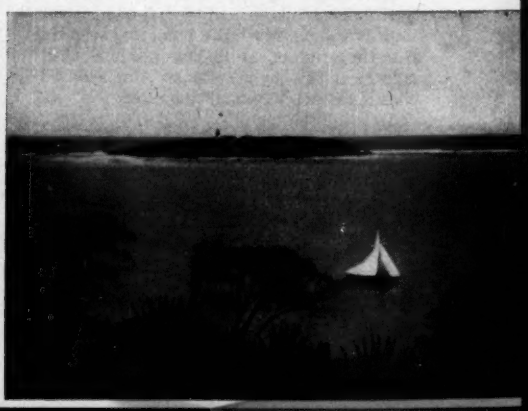
We left Havana on April 8th, stopping over at Miami for a couple of days to pick up spares. On the 11th we took the flight to San Juan, P. R., where we remained overnight, and then continued the next morning via St. Thomas, St. Croix and Antigua to Pointe-a-Pitre, Guadeloupe, where we arrived at 1430 Atlantic Time. We were met at the airport by the Pan American officials, Jacques Bunel, Andre Latil and Bob Eppelein, who had received advance word of our expedition. Not being in possession of the final licenses, our equipment was held by the customs authorities. As it was too late to drive the 60 kilometers to Basse-Terre, the capital, we went sightseeing. We stopped overnight at Pointe-a-Pitre's Hotel Diligenti, a modern three-story building.

The next day Jacques and Bob drove us the 60 kilometers to Basse-Terre. This trip took us over three hours because of the winding roads through the mountain passes. We could not help but be impressed by the tropical beauty of the island, especially its waving tall ferns, flowering plants, roaring cataracts, and small crystal streams. The natives were extremely hospitable.

Upon arrival at the capital we met M. Binois, Directeur of P.T.T., who was most helpful and cordial. He issued us the call FG7XA and wished us luck. We returned to Pointe-a-Pitre too late to get our gear out of customs so we traveled onward a short distance to a little village called Gosier, overlooking the ocean. Here we found "Le Pergola," the best restaurant on the island. During an excellent dinner fortified with white and red wine and champagne, we mentioned to M. Mario Petreluzzi, owner and manager, that it would be perfect if we could rent the attractive little cottage we had noticed about 500 feet away. He immediately got in touch with the owner who put the house at our disposal, free of charge, for as long as we remained on the island.

*Ave 2da, entre Paseo del Rio y, Real del Sur, Country Club Park, Marianao, Havana, Cuba.

The FG7XA "shack" and view out to sea.



CM2AC and CM9AA literally "burn the midnight oil" to keep FG7XA on the air around the clock.

♦

The following morning, April 14th, we were able to take our ham gear out of customs. We lost no time in returning to our oceanside shack where FG7XA was promptly set up. Our first contact was on 20-meter 'phone, with W5BGP. Needless to say, from then on the QRM was terrific!

Conditions on the island made operating very difficult. Line voltage ran from 67 to 100 volts, and at least once every 24 hours the power would go off without warning. These failures would last anywhere from one to fourteen hours. M. Petreluzzi, seeing the fix we were in, generously offered the loan of the 3½-kw. generator which he used for his restaurant. Since this unit was firmly seated in a cement foundation about 350 feet from our transmitter, we solved the problem by using wire from a 1000-foot spool of No. 20 which was among our supplies (wire was not available on the island). This arrangement gave us an emergency power source of 95 volts, 50–62 cycles, for our station. Water had to be added to the generator every 30 minutes, so when we were using it we had to QRX to refill, to the consternation of the many hams standing by.

We found it necessary to operate the transmitter outside its cabinet because of overheating. As a result, countless tropical insects succeeded in shorting out condensers, adding capacitance, changing the frequency of the ECO, etc. On one occasion a lizard entered the push-to-talk relay and was cooked, leaving an odor that DDT plus Chanel No. 5 could not eliminate. We were in dire need of screening, which was unprocurable.

We operated around the clock. I took the 0100–0700 watch plus certain daylight ones. Lily took all the other watches, although Dick Bennett, an American engineer who works for Texaco, aided us at times. Incidentally, Dick is now a prospective American ham and contemplates taking the exam in Puerto Rico.

Twenty was our favorite band — both 'phone and c.w. — and it was there that we worked most of the gang. Forty was a disappointment; we had hopes of working at least 500 stations on this band but had to settle for 200. Ten meters was open to the States, South America, Europe, Africa and Asia for about six hours on five days, but even there results were not up to expectations. We tried eighty for a number of nights but the best we could do was work 15 KP4s and VE1QW (KP4DV very kindly sent us a folded dipole via PAA to help performance on this band, but to no avail).

The final tally of our operation shows 1400 stations worked on 'phone and 746 on c.w. A total of 110 countries was worked to assure DXCC, and WAC was made eight times on 'phone and twelve times on c.w. Montana, Utah, Idaho and Wyoming were not heard, spoiling our chances of making WAS.

The bad operating practices of a number of stations could hardly go unnoticed from our vantage point. Though we stated definitely on regular occasions that we would not answer anyone calling on our frequency, many of the 'phone gang persisted in calling zero beat for as long as five minutes at a time. On c.w., we had a difficult time receiving reports from the stations being worked because of operators who rudely called us before we had finished our contact. Then there were the stations who called us blind without even knowing our frequency. And, despite our pleas, there was another group who worked us every day just to swap reports and seek reassurances on QSLs.

Speaking of QSLs, a photographic FG7XA card will be sent to all stations worked, upon receipt of a card. The cards will go forward via the various ARRL bureaus and those of the foreign amateur societies.

Lily and I wish to thank our many friends, newfound and old, whose assistance and advice helped make our sojourn in FG7 a long-to-be-remembered one.

220-MC. RESTRICTION

Because of some special experimental work being conducted by the Army at White Sands proving ground, New Mexico, lately greatly accelerated by the requirements of national defense, FCC has found it necessary to withdraw the 220–225 Mc. band from normal amateur use between the hours of 5 A.M. to 6 P.M. local time Monday through Friday in an area bounded by parallels 31°53′ and 33°24′ north, and longitudes 105°40′ and 106°40′ west. This is roughly the western half of Otero County, the eastern portion of Dona Ana (except El Paso) and the southeastern tip of Socorro County, all in New Mexico. There is no restriction on the use of the band after 6 P.M. until 5 A.M., and no restriction whatever on Saturdays and Sundays. In the event of civil defense emergency, the restriction does not apply for such amateur stations as may be authorized; special arrangements for civil defense drills during the restricted hours may be made by mutual agreement between the FCC Engineer-in-Charge at Dallas and the Area Frequency Coördinator at White Sands.

The World Above 50 Mc.

CONDUCTED BY E. P. TILTON,* W1HDQ

"WHY can't we get more activity on 6 meters?" This question is often asked by fellows who do all or a major part of their hamming on the 50-Mc. band. Well, why can't we? Is it because a large percentage of the ham fraternity do not appreciate what this band has to offer? We think so, and refuse to believe that hamming on 6, and getting a bang out of it, requires a special type of amateur.

Let's look at three typical hams. If they can be put in categories (can any ham?) they are, respectively, a low-power enthusiast, a ragchewer-experimenter, and a DX hound. The first has been on 6 for a year, with less than 5 watts input to a single 6J6 final. His rig uses a 200-volt receiver-type power supply; causes no TVI, no BCI. Physically it is little more than a good-sized handful. At this writing he's up to 12 states worked, and confident that several more will be added this summer. Just the other day he worked a Missouri station, for that fellow's first Connecticut contact on 6, and he's worked more than 100 miles on ground wave from an ordinary residential location. He could go on higher power tomorrow, if he wished, but doesn't find it necessary. There's still a lot to be done on 5 watts, and it's fun trying.

Our second typical ham doesn't care if he never works more than 100 miles. DX leaves him cold, but he loves to tinker with circuits, and his favorite pastime is a long ragchew with another fellow who looks at ham radio in the same light. He's even put a single-sideband rig on 6, just to prove that it could be done, and he has a couple of cronies on s.s.b. on 75, with whom he works crossband to 6. He finds 6 the ideal medium for the kind of contacts he most enjoys, and his only complaint is that there are not enough fellows on the band most of the time.

The third man got into hamming back in the early '30s, for the express purpose of working on 56 Mc., and he devoted three years of intensive effort to that band before trying another amateur frequency. For 18 years he's never been off 5 or its 6-meter successor. He likes the reliable ground-wave range that 6 offers the year around, and gets a lot of pleasure out of the friendly chats that are possible even under the worst conditions. But it's when the band is hot that he's really in his element.

Nothing pleases him more than digging out some nice double-hop signal when the band is apparently dead. When W7JRG answered his c.w. CQ at 11:10 P.M. May 24th he could have been more pleased only if it had been Montana or Utah, the two states he needs for 50-Mc. WAS. Raising VE5NC a few nights later was at least as much a thrill for him as would have been his 100th country on 10. His first W6, back in 1939; the European and South American openings at the peak of the sunspot cycle, 1946–9; catching Nevada in 1950, or gunning for those last two states when double hop appears in 1951 — all these are, for him, thrills of the highest order.

These typical hams are, in the order described, W1DJV, W1PNB and W1HDQ. Their diverse reasons for liking 50-Mc. work can be matched by hams in all call areas who work 6 regularly, and get a lot of fun out of it. Old-timers like W1DJ, W4MS or W6OB; fellows like W9VZP, who summed it up the other night with, "I wouldn't swap this band for all the others put together!"

How about you? Maybe you'd like it, too!

May in Retrospect

The month of May lost no time in getting the v.h.f. DX season properly under way. The very first night brought a widespread aurora opening to the Northeast, a sporadic-*E* skip opening to the Southwest, and a fine tropospheric opening to the South. The 50-Mc. DX then sagged for a while, but the last ten days or so brought the month to a close in a blaze of glory.

The aurora of May 1st was apparently one of the best of the season to date. Beginning in late afternoon and running through about 9 P.M. EST, it provided innumerable DX contacts on both 6 and 2. One of the better 2-meter lists is that of W4AO, Falls Church, Va., who worked W1s BCN IZY, W2s SFK ACY, W3MON, W8UIX, W9s EHX FJB LIR SUV, and VE3AIB. Heard were W1HDQ, W2PAU, W3NKM, W3RUE, W8WJC, W9UCH. Ross noted, along with several other observers, that maximum signals came with the beam somewhat west of north, even for W1 and 2.

As in previous large-scale aurora openings, this one demonstrated the need for greater use of the frequencies above 144.5 Mc. Low-end crowding is not troublesome when only a few signals are coming through, but it can

144-Mc. Work Across the Gulf!

Signals had been heard across the Gulf of Mexico on 144 Mc. before. It was well known that conditions were often favorable for v.h.f. work between Florida and Texas during the summer months, but stations had never been on the air in the right places, with the right equipment, at the right time to break down this long path.

To correct this condition, W4LAW, Tampa, Fla., and W5ONS, Victoria, Texas, arranged to make nightly tries at 9:30 P.M. EST, beginning in late May. Other stations at both ends, and in between, were invited to take part. First success came on May 29th when W4LAW heard W5DCV and W5BDT, of Austin, Texas, 950 miles, on May 29th. The following night two-way contact was made with W5ONS by W4LAW and W4HAD, 900 miles. W5EM and W5MXJ of New Orleans were also worked, and the signals of W4LAW were heard at many points in Texas, and by W5JTI, Jackson, Miss.

* V.H.F. Editor, *QST*.

be a limiting factor on the DX possibilities of a widely-observed aurora. More W1s and 9s, for instance, could make contact if they would move up out of the low-end mass of W2s, 3s, and 8s, and look for others doing likewise.

There was evidence of mild aurora on the nights of the 2nd and 14th. Late in the afternoon of the 26th, sandwiched in between two sporadic-*E* breaks, a short aurora period provided a few more 6-meter contacts for VE1s, VE3s, and the never-failing W1PWW. The latter shares with VE3AET honors for never missing an aurora opportunity. Located in Bangor, Maine, too far north for many contacts with more 6-meter conscious areas to the south, this fellow is always on the job when there is aurora DX to be worked.

There was a bright auroral display between 8 and 10 P.M. EST, extending to overhead at Middleboro, Mass., but W1IZY observed no auroral propagation on 144 Mc. during these hours. Jack did work W4AO and two W2s in the late afternoon, however. This emphasizes the point that the brilliance of the visible display is not necessarily an indication of its v.h.f. DX possibilities. Many of our best aurora opportunities come in the last daylight hours, and some of the bright overhead evening displays seem to do us little good.

While the gang in the Northeast and Middle West were enjoying the aurora of the 1st, the 2-meter band was serving up different fare to the W5s in Arkansas, Louisiana and Texas. W5VX, Little Rock, reports that his first DX of the season was W5FSC, Houston, some 400 miles to the southwest. W5ML and W5DXB, in Northeastern Louisiana and W5AQS in Palmer, Texas, were worked with perfect signals each way for hours, and the stations in Texarkana, 130 miles away, were the loudest ever heard on 2 in Little Rock.

The 2-meter pipeline down the Atlantic Seaboard opened for its summer business on May 14th, with stations all along the line from Cape Cod to Southern Virginia taking advantage of the chance to renew acquaintances.

Two-way communication on 144 Mc. across the Gulf of Mexico? Could be; signals have been heard each way on a couple of occasions, and now and then aircraft ground signals in the v.h.f. range are heard all the way from Jacksonville to San Antonio. W4LAW and W4GFE of Tampa and St. Petersburg, Fla., are running nightly skeds with several Texas stations, and it appears only a matter of time before this hop is made two-way. On the night of May 29th, W4LAW heard W5DCV in Austin, about 950 miles, from 9:59 to 11 P.M. EST, and W5BDT, also of Austin, for a short time around 10 P.M. W4LAW aims north from 9 to 9:30, and west from 9:30 to 10, nightly, in an effort to work 2-meter DX outside the state of Florida.

In years of working DX on 5 and 6, we've come to take the ordinary single-hop stuff pretty much in our stride. It's lots of fun, and it provides a fine opportunity for 6-meter men around the country to compare notes and swap yarns. But it's the double hop that really raises the temperature of the long-time 50-Mc. enthusiast.

There are so many imponderables that scouting double-hop DX becomes a game of skill and luck in the best DX tradition. Formerly considered a great rarity, probably because our equipment was not capable of making the most of the opportunities it affords, double hop (1500 miles and farther) is now worked much more often than we once thought possible. In the closing week of May, for example, there was double hop on six out of seven consecutive days.

During the evening of May 24th there was sporadic-*E* skip over much of the country. W1s were working into Florida early in the evening. From Dallas, Texas, W5AJG worked Minnesota, Florida, North Dakota, Iowa, South Carolina, Tennessee, Illinois, Wisconsin, Ohio and Michigan, in that order, with some repeats here and there — all single hop. Out in Sheridan, Wyo., W7JRG was hearing Tennessee, Indiana, Illinois, Wisconsin, Michigan and Texas, all within single-hop range. There was a short burst from a Washington, D. C. station around 8 P.M. MST, after more than two hours of observation, so Ken stayed with it, watching the band closely for weak signals. This paid off, for at 8:10 P.M. he was able to catch W1HDQ, as your conductor made his before-retiring check of the band at 11:10 P.M. EST. W4LAW, Tampa, Fla., heard W7JRG from 8:55 to 9:29 EST, and W7FLQ, Spokane, Wash., briefly at 9:29. W7JRG was also heard, between 10:10 and 10:30 EST, by W1RVW and W1CGY, while he was working W1HDQ and VE3AET.

Double hop was in again early in the afternoon of the 26th. South Texas W5s OUT GYP and CXS were working Tennessee, South Carolina and Mississippi, and breaking through at intervals in W1. The single hop they were working was inaudible here, an example of a condition that places some shadow of doubt on the complete authenticity of the term, "double hop."

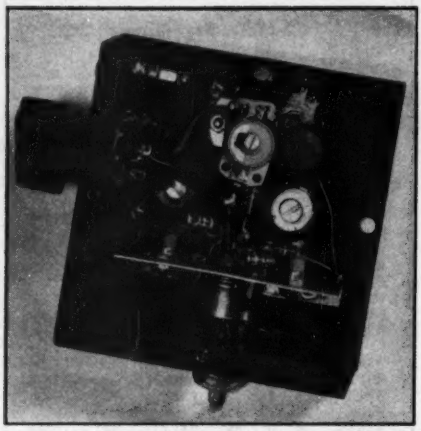
The following evening the northern part of the Middle West was being heard by W1s and 2s, so the sharpies were on the watch for double hop from farther out. It came briefly at 10 P.M. EST, in the form of VE5NC, Boharm, Sask., who gave the writer and W1KHL the first VE5 contacts from the East on 6. This was all the W1s got out of it, but Florida W4s were having a field day with New Mexico, Arizona and California stations.

On the 28th the eastern scene was enlivened by the appearance of W7ACD, Shelley, Idaho, along with signals from the Dakotas, Minnesota and Wisconsin. Louie worked W1PWW, Bangor, Me., W1CLS, Waltham, Mass., and possibly other W1s, and was heard by everyone in the Boston area for about an hour. His appearance in Western New England was confined to a matter of five minutes or so, showing how selective double hop can be.

The night of the 29th was another big one all across the southern part of the country, but as so often happens in the early part of the season, there was only a snatch of dou-

2-Meter Standings

Call	States	Areas	Miles
W1HDQ	16	6	650
W1IZY	15	6	750
W1MNF	14	5	570
W1BCN	13	5	500
W1CTW	12	4	500
W1KLC	12	4	500
W2BAV	21	7	1175
W2NLY	18	6	750
W2PAU	15	6	740
W2DFV	13	5	350
W2CET	12	5	405
W2DPB	12	5	500
W2QED	12	5	365
W2FHJ	12	5	—
W2QNZ	12	5	—
W3RUE	17	7	760
W3NKM	17	7	660
W3QKI	16	7	820
W3LNA	14	7	720
W3KWL	14	6	480
W3GKP	13	6	610
W3OWW	13	6	600
W3KBA	13	6	—
W3KUX	12	5	575
W3PGV	12	5	—
W3LMC	11	4	400
W4HHK	15	6	660
W4JDN	13	6	—
W4JFV	13	5	720
W4IKZ	13	5	650
W4JFU	13	5	830
W4LVA	13	5	400
W4MKJ	12	7	665
W4OXC	12	7	500
W4CLY	12	5	720
W4JHC	12	5	720
W4OLK	12	5	720
W4FJ	12	5	700
W5JTI	14	5	670
W5ML	8	3	725
W5ERD	8	3	570
W5VX	7	4	—
W5VY	7	3	1200
W5CVW	7	2	560
W5AJG	7	2	450
W5FBT	6	2	500
W5FEK	6	2	500
W5IRP	6	2	410
W5FSC	5	2	500
W5JLY	4	2	650
W5ONS	4	2	600
W5ZEM/6	1	1	415
W6GGM	1	1	300
W6YYG	1	1	300
W8WJC	20	7	775
W8BFQ	20	7	775
W8WXV	18	8	1200
W8UKS	18	7	720
W8EP	17	7	—
W8WRN	16	6	670
W8RWW	14	7	500
W8WSE	14	6	620
W8FQK	13	7	—
W8CYE	12	6	—
W8BAX	12	—	655
W8CPA	12	—	650
W9FVJ	20	7	790
W9UCH	19	7	750
W9SUV	19	7	—
W9EQC	17	7	820
W9BOV	15	6	—
W9WOK	15	5	690
W9AFT	14	—	—
W9NFK	12	7	690
W9UIA	11	7	540
W9FPE	11	5	800
W9GTA	11	5	540
W9NFM	14	7	660
W9IHD	13	6	735
W9EMS	13	5	1060
W9ZJB	12	7	1097
W9WGZ	11	5	760
W9HXY	8	3	—
W9JHS	7	3	—
VE3AIB	12	6	600
VE1QY	11	4	900
VE3BOW	8	5	530
VE3BQN	6	4	540
VE3BPB	6	4	525
VE3DER	6	4	450
VE3EAH	5	4	380



Interior view of the 50-Mc. mobile converter designed by W4MJR. Being fixed-tuned, it can be mounted anywhere near to the car broadcast receiver with which it is used. The case is a 2 × 4 × 4-inch utility box.

ble hop for the gang farther north. While a whole batch of W6-W4 contacts were being made, only W6ANN was heard in W1, so far as is known, this taking place around 9:20 P.M. EST, while W9UIA and WØJRP were in strong on single hop.

Memorial Day will be remembered by 6-meter men as one of the best days on record. Perhaps it was just having stations around all day that made it so, and maybe there are many more such days than we now suspect, but this one found the band open practically the entire day. As early as 7:30 A.M. W1s were working W4s, and W4MS, Pensacola, Fla., worked XE1GE, Mexico City, at 7:45 A.M. CST. The entire eastern half of the country was hot with single hop for at least seven hours from late afternoon on, and there were brief spots of double hop (W1 to South Texas) at intervals.

Thus we see that double hop was observed six out of seven consecutive days, May 24th–30th. Much of it was of short duration, and tough to latch onto, but its appearance night after night in late May points to better things for June and possibly July. One thing is certain: this sort of DX could be worked more often if more of the gang would be on the alert for weak signals, making more calls on c.w., particularly when it *appears* that the band is going dead. Many times the double-hop DX comes in when loud single-hop signals either drop in strength or disappear completely. Too many of us give up too soon!

Here and There on the V.H.F. Bands

Oak Ridge, Tenn. — While most civil emergency communication is being done on 10 or 2 meters, a number of groups are making good use of 50 Mc. In the Atomic City, for instance, the Oak Ridge Radio Operators are using a net frequency of 50.7 Mc. for drills conducted regularly each Tuesday and Friday at 7 P.M. EST. Both mobile and fixed stations participate, communication with mobiles having been maintained successfully out to 30 miles or so. Even in the hilly terrain of Eastern Tennessee, the distances normally encountered in emergency work are covered with ease.

For transmitting, the Oak Ridge stations are using overtone oscillator rigs with 6J6s or 12AU7s driving a variety of final stages up to 815 finals with inputs up to 35 watts. The receiving end in most installations is handled by an extremely simple single-tube converter designed by W4-MJR, working into a car broadcast receiver. No claim is made that the converter, shown in the accompanying diagram and photograph, is the ultimate in design, but it does the job with a minimum of cost and complication.

A 6J6 mixer-oscillator with fixed-tuned circuits works into the car receiver as a tunable i.f. Sufficient coverage is available in this way to tune either of the two civil defense band segments, if the oscillator is set for one or the other. Tuning the car broadcast set after resetting the oscillator also allows coverage of the low part of the 50-Mc. band, where most of the regular activity is at present concentrated. With 19 of these units in use or under construction, and eight mobile stations already in service, the Oak Ridge gang are making quite a dent in the 6-meter band in Eastern Tennessee.

Dayton, Ohio — The Dayton Amateur Radio Emergency Corps, faced with the need for some 50 complete stations, mobile and fixed, for operation on 144 Mc., has organized a community project for their construction on a mass-production basis.

Transmitter design was standardized on the all-6J6 job described in *QST* for March, 1950, adapting the circuit for 8-Mc. crystals, and the layout to suit parts that were available locally. Individual parts stocks were pooled, and all local distributors canvassed for assistance in securing the necessary additional material. The emergency nature of the project was stressed and the required parts were soon made available. Assembly-line techniques were employed, and the quota of rigs is now nearing completion.

Receivers are now under consideration, with simple superhets of the resistance-coupled or superregenerative types getting the nod. Something less than the ultimate in sensitivity may well do the job here, as the accent is on simplicity, low cost and reliability. Further information on the Dayton project can be obtained from the EC for the area, W8ZFO.

Pensacola, Fla. — What 6 can be like for a W4 in just an ordinary opening is shown by the list of stations worked by W4MS on the night of May 20th. Hearing the VE9RB beacon coming through at 7:57 P.M. CST, Eddie called CQ

(*Continued on page 108*)

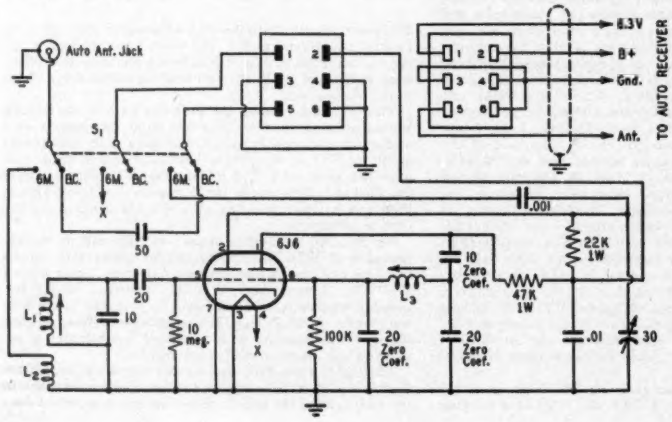


Fig. 1 **— Schematic diagram of the 50-Mc. mobile converter used by the Oak Ridge Radio Operators emergency net.**

L_1 — 6¾ turns No. 30 enam. close-wound on Millen 69041 slug-tuned form.

L_2 — 1½ turns close coupled to L_1.

L_3 — 8 turns similar to L_1.

S_1 — 3-pole 2-position switch (Mallory 3142J, 3242J, etc.)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

Or should it be "How Not" this month?

Anyway, twenty appeared lush with intriguing signals as "Tetrode Bill" O'Hassenpfeffer warmed up the filaments of his push-pull-parallel 1625s. But, as so often happens these days, by the time he was ready for action a few moments later the band was practically flat. "Pfui," said Bill, running the gains of his preselectors to the thermal level; he was going to give it a try, nevertheless.

And what should appear on approximately 14,000.001 kc. but the fast, fading c.w. of that new ZD7 he had been stalking for weeks! The fellow was busy batting off QSOs like W4KFC in the first hour of a Sweepstakes. "This," thought our hero, "is where little Willie collects number eighty-eight of his soon-to-be total of 250 countries!"

Tetrode Bill might have gotten him, all right. The skip was just right for Cranium Hollow and St. Helena. But W5-oink-oink, unfortunately, raised him first and W5-oink-oink was not one to be perturbed by the fact that the ZD7's operating time was of inestimable value to others in the chase.

Word from the ZD7 testifying that his QTH was okay in the call book was insufficient for this meticulous fellow; he insisted upon the full address even down to the operator's middle initial. Tetrode Bill, who could copy the W5's hollow scatter wave, breathed a sigh of relief at the conclusion of this exchange as undoubtedly did a few dozen other sufferers. But this was just the beginning.

W5-oink-oink proceeded to run some antenna tests (which he could have done with any ZS) and after about four QRK?s he settled on using the combination that was one-half an estimated S-point better than the others. Thereupon he commenced to quiz the ZD7 as to the present whereabouts of old ZD7XXX who happened to be the only one of W5-oink-oink's five ZD7 QSOs not to QSL. Also, did he know an old buddy there who also worked for the CCC?

Bill bore up well under the strain though his fingers drummed themselves to the bone. After all, at 35 w.p.m. this couldn't go on much longer and, besides, a few competitors with less time available might drop out of the pack. (He should have sensed that more were joining by the minute.) Eighteen minutes later W5-oink-oink was heard to say, "DONT WANT TO HOLD U BUT NW PSE LISSEN FER MY QRP FONE ON . . ." and off he went, taking the hypnotized DX station with him.

We leave Tetrode Bill busily winding coils for eighty meters and oiling up the mill for some traffic work. . . .

What:

General conditions may not be as favorable as during many past years but it is apparent from the mailbag that some shrewd operating and ultramodern equipment performance is tending to cancel out this dismal fact. On *twenty*, W3JY8 raised a new beam and plenty of choice stuff on all continents. A cross section of Lee's list by continents, starting with Asia: KR6s CP (075) EK (086) FG (048), HZs 1AB (078) 1HZ (020 t7) 1JD (028), JAs 2FM (020) 2GA (062) 2HQ (122) 2XE (022) 3AD (024) 3AG (100) 3AH (042) 5DN (090) 7SS (086) 8OT (088), VSs 1DB (075) 6CB (051), ZC6DO (046), 4X4s DE (018) DK (085). Oceania: VKs 1NL (015) 9GB (045), VR2AA (036), DU1s DO (070) JI (116), KJ6AP (057), KX6AB (083), KG6s AAH (054) HU (038), ZM6AK (015), ZK1AB (032). Africa: ZD2s DYM (057) TBS (015), OQ5VN (086), VQ4HJP (062), CT3AN (045), EA8BD (034), 3V8AN (055). Europe: EA6AF (038), CT2BO (001), GC5OU (102), GD3UB (010), F9QV/FC (088), SV0AB (090), ZB2L (044), ZC4XP (070), 9S4AR (061). Americas: HH3L (040), PG7XA (015), CP5EK (000) . . . . . Another juicesful selection turned up on the right side of W9HUZ's tally: SU1AD (012), F8EX/AR (020), CR7AG (020), VT1AF (034), IT1SEM (077), EA9AP (007), CT3AD (068), FA8DA (012), CN2AA (080), YV5EB (106), JAs 2KW (012) 7WH (018), EA8BE (070), UAs 1KAC (063) 1NR (084) 3HI (026) 3KTB (006), UBs 5BG (086) 5DQ (040), UP2KBC (034), UR2KAA (080), C3AB (075), VSs 1DU (054) 6AC (082) 7NX (056), VR2CG (050), 4X4s BX (020) RE (005), and ZB1BJ (014). Van incurred the XYL's wrath through a lengthy chat with Georgette of YV5EB when he should have been shopping for ice cream . . . . . Also working some of those previously listed, W5FXN adds ZE3JJ (045) at 0500 CST, MI3AB (008) 0300, VP5BH of the Caymans (075 t7d), UA1BN (018) 0430, FR7ZA on Reunion (020) 0430, and KS4AP (060) 2245. On Jim's want list remain FL8AE (030) 0500, KW6AG (030) 0500, UC2KAB (068), VP8AP (030), UA9CC (015), and VT1AC (010). W5DML tells W5FXN of working a TT8KAA

* DX Editor, *QST*. Please mail reports of DX activity to W9BRD's home QTH: 1517 Fargo Ave., Chicago 26, Ill.

DXCC ('phone) member Giulio Schiff, I1AXD, logs a rare one in Milano while daughter Luciana, I1BXD, provides moral support in Pop's DXing period.

♦

(150) 0400 in Tannu Tuva . . . . W3MLW found things hot enough for a three-hour WAC at Lake Ariel plus **CR5AF** (160 t7), **FQ8AC** (040), **9S4AX** (005), **ET3A** (045), **VQ4CD** (150) and **VR2BZ** (080) . . . . "I've been so busy working the stuff that haven't had time to write about it!" exclaims **WØFID**. That's no exaggeration, either, judging by his scoresheet: **FP8BX** (072), **FQ8AF** (015), **UA9s KFB** (050) **KSB** (087), **UA4HI** (022), **FF8JC** (013), **KH6KL/KP6** (030), **KR6GD** (050), **KG6HU** (077), **DU1GT** (097), OX3UD, TF3MB, YV5BX, and **TA3FAS** (080). Dick is still after **KC6WC** (085), **KB6AQ** (055), MB9BJ, and **ZP5LN** (032). Interesting confirmations received at WØFID of late are from HR1RL, DU6IV, YS1O, Z83K, ZE3JP, and V86AC. Dick is another who gets along sans a beam . . . . Five years of patience paid off with W2JBL's first JA and George added **YO3RI** (004), **LJ2Z** (055), **SPIJF** (002), two 4X4s and two aforementioned EA8s . . . . W3QLW returned to action with a flourish by working **FK8AD** (050), **VQ3SS** (061), **VS2MM** (042), **YU3FMI** (032), and some Israeli entries, reaching 101 worked . . . . W1APU's card was returned by G2MI anent VQ9AA. Somebody then added insult to Dave's injured feelings by putting a VQ9AA on 20 meters for him to hear. Quoting the R8GB bureau: "VQ9AA is an out-and-out phoney." . . . . W4LYV was intrigued by **C4AK** (013) and W8YGR knocked off **EA8BF** (058) and **FA8RJ** (004) . . . . XZ2AD, VS7NG, HS1SC and HS1VR were hauled in at W6ALQ and W6WQX's list is headed by VS1EJ, JA2IM, C9DZ, KG6BQ, KM6AT and KW6AR . . . . W5A8G got back on to make it 213 with FQ8AG, 4X4CR, VS7NG, VR1G, FB8ZZ, C3KJ and HE9LAA in Liechtenstein . . . . The *Bulletin* of the So. Calif. DX Club lists **SU1GM** (020), **VP8AU** (001), **ZS3P** (160), and the boys are giving the VT1 gang a good workout . . . . SWLs R. Schiller and P. Bates heard a few we don't find listed in licensee reports: **Cs 3FA** (025) **4AQ** (015) **8OA** (030) **9AA** (007) and **MD2JB** (020) were logged by the former and VK1s JW KJ, LZ1KEP, DU1AL, KX6BI, and YU3AC by the latter.

On *twenty 'phone*, XE1AC digested **ZM6AA** (312), **ZK2AA** (285), **VR1G** on Canton (179), **VS1DT** (317), **FF8DA** (341), **ZD6RD** (307), **EA6AF** (393), **EA8AW** (357), **EA9AI** (340), **ZS7C** (348), and **UAØKKB** (091). The latter gave Al a start when *he* requested a 'phone test while on c.w. XE1AC has little faith in **FI3QH** (305) and **ZD8AA** (341) . . . . **ZD6NJC** (170), **ZP2AE** (300) and **VR1C** (180) answered W5FFW and newly-installed JA7RE is on the lookout for Stateside QSOs on this band . . . . W1NWO scored with **FE8AA** (350), **9S4AX** (010), and **VT1AB** (315) who informed Willard that it was his first U. S. contact . . . . G2BXJ is seeking western states on 14,200 and 14,362 kc. as well as Ala. and Ark. QSOs . . . . HC2JR says that **HC8GI** (195) will be on quite regularly and W5JUF made off with Z87s B and C in a fancy three-way. John P. also added **FK8AX** (200), **VS1AD** (330), ZK1AB, VR2BT, FO8AB and W2AQE/KM6 . . . . SWL John DeMyer found **FO8AB** on 14,325 kc. as well as **ZD6HJ** (185) and Phil Bates mentions VK9s HI and YT as pouring through well in the early mornings . . . . W8VDJ told W4KVM/1 of a long-path **ZE2JE** (320) contact and the No. Calif. DX Club's *DXer* points out **VT1AC** (055), **VS9AH** (306) and **EA9AB** (400) . . . . The *Bulletin* adds two nifties: **FL8AD** (398) and **AC3PT** (315).

Much of the exotic stuff on *forty* has migrated back to 14 Mc. apparently and so have many of the hunters. 250 watts and a vertical folded dipole assisted W9HUZ to dig up **CT1s DA** (050) **DJ** (018), **YV6AO** (033) and **OZ4KT** (013). Gs, ZSs and ZLs were also plentiful in Van's log . . . . **ZS1LS** (015) and **FM7WF** (008) were pinned down by WØFID and W3MLW salted away an **FKS8AZ** (065) QSO . . . . W6QWX's crystal-bound 807 raised much Oceania DX topped by KW6AG plus VE8TA while W7OHX/6 has been hearing people like YS1O, ZD4AB, OA4J, VR2AA, FK8AB, VP8AK and Z85FY.

Forty-four 3.5-Mc. countries have been collected by W6ZAT and this is a dandy West Coast total. Some customers for Del's ground-plane hook-up on *eighty* have been VP5FR, VP4TV, VP4LZ, VP7NM, TI2PZ, ZM6AK, YN1AA and VP8SJ. Heard but not raised were HZ1KE, FA9RW, TA3GVU, KJ6AN, VQ2LU, HC2EU, ZD4AB, CT18Q, SP1JF, HB9EU, PAØTE, DL5BS and DL6NU. W6ZAT notices regretfully that quite a few juicy ones he hears go QRT just before conditions peak in W6 . . . . At the other end of the continent, VE1JD still finds the pond crossable. Many Europeans were worked including EI9J, PAØZO, PAØXYZ (there's a call!), OZ7BO and several Gs, all in the bottom 20-kc. portion of the band . . . . If you haven't read so elsewhere, you 80-meter dyed-in-the-wools will be interested in learning that the IARU is now endorsing WACs for eighty. They're not exactly plentiful, either.

On *ten*, the password of the faithful is LS/MFT, or, "Lord, Save Me From Twenty." Still holding steady in an avalanche of practically no DX signals is the Jersey twosome, W2ZV8 and W2AEB. Using 'phone, of course, the former managed contacts with FG7XA, Z83S, OQ5CC, OQ5NK, MD2AM, CP5EQ, ZP5BA, HR1KS, HR1RL, VP6C8 and many ZSs-proper. Annexed by W2AEB via the same medium were 3V8BA, ZD2DYM, EA8AX and the same FG7XA.

Where:

With new K84 calls about to become active a reminder may be in order to the effect that all Swan Island stations may be QSLd to Swan Island, West Indies, via Tampa, Florida . . . . We understand that the TRAC of Tangier will forward cards to stations using the CN2 Tangier Zone prefix.

C3AB	Box 22, Taichung, Formosa
C3JK	Jack Sun, P. O. Box 419, Taipeh, Formosa
CN2AA	(QSL via EK1AO)
CR4AH	Pinheiro Sal Island, Cape Verde Islands
EA9AP	Box 213, Melilla, Spanish Morocco

3.5-Mc. WAC Endorsement Announced

Endorsements for working all continents on 3.5 Mc. will now be issued to qualified applicants for the WAC certificate by the International Amateur Radio Union through ARRL Headquarters. New applicants for the WAC award desiring the 3.5-Mc. endorsement must submit six QSL cards confirming two-way contact with the continental areas of Asia, Africa, Europe, North America, Oceania and South America. These cards must clearly indicate that the exchange was made on 3.5 Mc. Applicants whose cards indicate all of the contacts were on 'phone will receive a certificate endorsed for radiotelephone as well. Present holders of WAC certificates may resubmit qualifying cards for the 3.5-Mc. endorsement, which is in the form of a sticker. IARU member societies will certify 3.5-Mc. applications to Headquarters for their members. Amateurs in countries not represented in the Union may send their applications directly to ARRL together with 10 International Reply Coupons (50¢ U. S. funds), the fee required by IARU rules.

EK1BT	(ex-G3AKF) % RCA Communications, British P. O. Box 57, Tangier, Morocco
EK1CW	(ex-G2CIW) % RCA Communications, British P. O. Box 57, Tangier, Morocco
EK1DS	% RCA Communications, British P. O. Box 57, Tangier, Morocco
EK1FB	(ex-G3GGD) % RCA Communications, British P. O. Box 57, Tangier, Morocco
EK1RR	% RCA Communications, British P. O. Box 57, Tangier, Morocco
EK1SP	% RCA Communications, British P. O. Box 57, Tangier, Morocco
ex-FE8AA	Cremailh, 3 Rue du Colonel Renard, Paris XVII, France
JA7RE	R. J. Earl, Staff, ComServRon 3, % FPO, San Francisco, Calif.
KM6AT	O. D. Rollo, RMN1, Navy 3080, Box 2, FPO, San Francisco, Calif.
KP4OD	Ted Page, E2A San Patrico Housing Unit, San Juan, P. R.
KX6AB	Box 3, Navy 824, FPO, San Francisco, Calif.
KZ5KK	Box 386, Albrook AFB, Canal Zone
LB5ZC	QSL to Bjoernar Augdahl, Gibostad, Norway
LZ1RF	Radio Sofia, Sofia, Bulgaria
MI3NA	APO 843, % PM, New York City, N. Y.
MI3RP	APO 843, % PM, New York City, N. Y.
VS1EJ	16 Lloyd Leas Changi, Singapore, Malaya
VS6CB	Box 541, Hong Kong
ex-VS9AH	J. B. Halton, 22 Hugh St., Bransty, Whitehaven, Cumberland, U. K.
YV5EB	Oficina Radiotelegrafica, Caracas, Venezuela
ZB1BS	(QSL via RSGB)
ZD4BD	R. Rothwell, P. O. Box 469, Accra, Gold Coast
ZD6NJC	Mlanje, Nyasaland
4X4BN	Haim Sturm, 7 Bialik St., Haifa, Israel
4X4BR	Friedmann Eli, 35 Blue Coast St., Bat-Galim, Haifa
4X4DE	Box 4099, Tel-Aviv, Israel
4X4DK	Box 4099, Tel-Aviv, Israel

Your thanks are due W1NWO, W2s AEB GVZ JBL ZVS, W3s MLW QLW, W4LYV, W5s ALA FFW JUF, W6s KIP WQX, W8YGR, W9s CFT HUZ JVI, WØFID, CN8EG, EK1FB, Messrs. P. Bates and J. DeMyer for this assortment.

Tidbits:

Two busy months since leaving the shack of ZL3LR, VR2CG slips us some notes on Fiji activity. "Twenty has been very spasmodic and cannot be relied upon much at all," observes Wyn. "Forty opens up early in the evening but due to the heavy atmospherics which build up shortly after nightfall I find this band of very little use . . . for DX." VR2CG is cooking up a dual 10/20 rotary and runs the maximum permitted 150 watts to 812As modulated by 809s. The receiver is an 8X16 with converter, the latter a 6J6-6J6 job. Wyn QSLs upon receipt of cards and does so via bureaus. VR2AA is scheduled to return to New Zealand shortly . . . . According to W2FYT, via W2CSA, EA3s FL and GQ were intending to operate from Andorra in June but call letters hadn't been decided upon. 20 and 40 c.w. activity was planned. More such operation could help erase unpleasant PX1A memories . . . . An OQ5DZ card with glamorous Ruanda-Urundi postage thereon arrived in John DeMyer's postbox and, as usual, raised the Countries List question. Your almanac will probably give you the answer to this one; the territory is closely linked to the Congo administratively as well as geographically . . . . W9CFT would like to know who the ZB2F was who told contacts to QSL via his bureau. Northern Wisconsin DXer W9OEB told John he was heading for Saudi Arabia for a year or two and would provide some more HZ activity or bust . . . . W3BXE still gets cards for an FP8AB fly-by-night. Jack did hold this call (and still retains it) but it has as yet never been used. W8JRG was recently victimised . . . . ZS2 is awaiting resumption of his FB8XX Kerguelen schedule but the fellow hasn't been as active as heretofore . . . . From W6UQQ we hear that K6CU enthralled the So. Calif. DX Club membership with an account of his VR4 adventures. Incidentally, K6CU (ex-KH6VP) already has passed the 100 mark after a scant 3 months of California on-the-airing. There is one guy who can dig up DX any place at any time under any conditions . . . . W1ONV, who used to sign 9FO, is dying for some dope on the present whereabouts of VP6HE and VK9OU. We're glad to give space to these QSL hunts because they often result in QTHs beneficial to other card-seekers . . . . VQ5AU uses crystal-controlled 14,036- and 14,056-kc. frequencies and prefers c.w. Ernie tells W9TQL that VQ5AB operates the 'phone bands but is not very active and VQ5DES will embark upon a c.w. binge ere long. Don't be surprised to encounter a VQ1 or two right about now, either . . . . "Have been on the air from Rabaul exactly one month today, Al, and have had just over 200 contacts and worked 35 countries so am quite pleased with everything. . . . This is my first spell on the ham bands since May, 1948, when I operated ZL1OH from Auckland, my hometown. . . . Have hopes of getting two others on very shortly now, VK9FM and VK9RG." So goes a letter from VK9GB written to W2WZ. Arch informs that ex-VR3A of Washington Island now pounds the brass of VK9RG and that VK9YT performs on A3 from New Ireland. VR4AB has been heard on Guadalcanal but only testing to date. VK9GB vows to catch up with the QSL backlog as soon as practicable . . . . PY9BR is interested in assisting DXers to obtain the Worked-All-Brazil sheepskin and puts out a fat 20-'phone signal with 120 watts and a zepp-fed wire. He prefers cards via LABRE. PY9BR's nephew is expecting his own ticket momentarily and intends to give PY9 activity a sharp boost . . . . DL4QH plans to operate 3A2AC in Monaco whenever possible and will use a 125-watt Globe Champion with an AR-88 inhaler. Don hopes to beat the hill there that shields the U. S. direction by employing a long Vee beam. G2WW and DL1CX may help out on these deals . . . . W5LAK, who gave Mississippi QSOs too much DX, now works at locating oil-bearing strata with an AØ rig on 1676 kc. for an outfit in Texas. With 103 confirmed, John's DXCC is now merely a matter of correspondence . . . . 4X4BX and the IARC QSL Bureau can no longer handle cards for ZC6 stations who claim to be operating from Israel as such operation is unauthorized. ZC6s DH DO DZ GI and JM come under this category . . . . W2FLP heard from G6YQ that 500 VP6CDI cards were en route W bureaus and W4RNP wonders how come he rated a TF3NA QSL without ever having worked Iceland. Who knows, Don may be giving the art of somnambulism a brand new twist . . . . ET3AE has been returning ET9X cards to W2UNR marked, in effect, "unknown" . . . . EA3FJ is another amigo planning a Field Day vacation in Andorra according to XE1AC and Al also reports a personal visit

(*Continued on page 104*)

It was a happy occasion when Col. Fred J. Elser, TA3GVU, recently returned to duty in the States, visited ARRL Hq. with the cards for his DXCC award. Looking on as Secretary A. L. Budlong, W1BUD, presents Colonel Elser (*left center foreground*) with his certificate are Hq. DXCC members (*l. to r.*) W1s FTX CEG IKE DX DF ICP VG RWS and TS. Colonel Elser has held a number of calls during his ham career, one of the best known being pi3AA (Philippines) which he signed 25 years ago. He is now W4GVU.

Hints and Kinks For the Experimenter

HARMONIC GENERATOR FOR CALIBRATION WORK

It is often difficult to hear the high-order harmonics of a signal generator when doing calibration work in a frequency range that is far removed from the fundamental frequency of the oscillator. In such cases a simple harmonic generator, such as that shown in Fig. 1, can be used

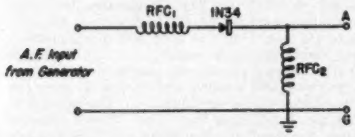


Fig. 1 — Simple harmonic-generator circuit using a 1N34 crystal diode to provide high-frequency harmonics from a signal generator operating in the audio range.

to provide a stronger "signal" in the desired range. A 1N34 crystal diode is used to rectify some of the output of the signal generator. The rectification generates harmonics throughout the spectrum.

An arrangement such as this would be of great help in calibrating the 6- to 10-kc. range of the BuStan test oscillator described on page 31 of *QST* for January, 1951. — *Russell O. Deck, jr., DL4OM, W9JVI*

TUNING AID FOR SCREEN-MODULATED AMPLIFIERS

The heavy loading required for linear operation of a screen-grid-modulated amplifier usually makes it difficult to observe any "dip" in plate current when the plate tank condenser is tuned to resonance. The simple addition of a resistor and a switch, as shown in Fig. 2, makes it possible to obtain a good dip, thus permitting easy adjustment.

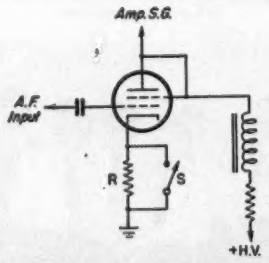


Fig. 2 — By adding a 250-ohm cathode bias resistor to the clamper tube, plate current to the final amplifier is increased to make the dip in plate current more pronounced during tune-up.

When tuning up, the switch is opened. This raises the screen voltage applied to the amplifier, which in turn results in more plate current. It is then easy to observe the dip at resonance. In addition, some means for making the speech amplifier inoperative should be incorporated so that no audio will appear on the clamper tube grid during tuning procedures. Once the amplifier is tuned properly, the switch is closed, returning the circuit to normal. — *Jerry Collen, W9CZI/5*

HOME-BREWED SLUG-TUNED COIL FORMS

Any enterprising amateur can make his own slug-tuned coil forms for about 15 cents each. Compared with the cost of commercially-available forms, the saving makes the effort worth while. As shown in Fig. 3, the form itself is made from a 2-inch length of plastic tubing. If you are

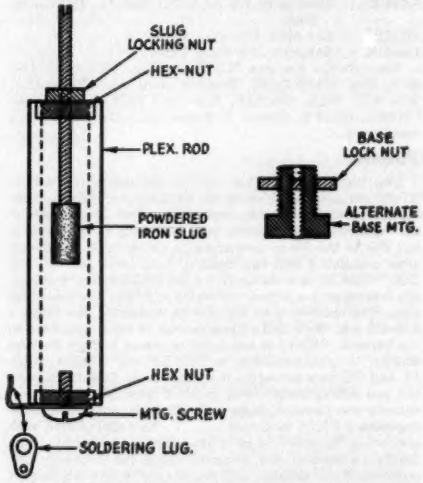


Fig. 3 — Method of home construction of slug-tuned coil forms from plastic tubing, hex nuts, and inexpensive powdered-iron slugs.

lucky you may be able to locate some polystyrene tubing of the desired diameter but other similar material will do. Powdered-iron slugs, which come with a 6-32 screw molded into them, can be bought for a dime each in the surplus market.

To mount the slug in the form, heat a hex nut with a soldering iron, and then press one end of the tubing down on it. If enough heat is used, the nut will sink into the plastic with ease, and will be held fast when the plastic cools. A small 6-32 nut is then used to lock the slug in position.

(*Continued on page 106*)

Correspondence From Members-

The Publishers of *QST* assume no responsibility for statements made herein by correspondents.

SUH?

1000 Overlook Ave., Chattanooga, Tenn.

Editor, *QST:*

I have just received from the Radio Commission my renewed Amateur Radio License. I object to the indignity I have suffered. According to the terms of the surrender accepted by Pres. A. Lincoln no punitive measures was to be drawn up against us Suthern gentlemen involuntarily demobilized from our military command. On this here license howsomever there is some fine print on its backside which is entitled "Conditions of Grant." I would just like to know howcom Generl Grant is making conditions like these. It ain't so much the conditions themselves but we objeck to having Generl Grant cut in on our operations. Next he will be wanting to impose a tax on working DX. Will you please investigate this here matter and if necessary refer it to the Pres. hisself. I don't think Generl Grant is supposed to have anything to do with ham radio, leastways not here in the South.

— Col. Ward Bukrman, W4QT
Formerly Communications Officer,
Confederate Signal Corps

GOOD & MAD

Narsarsuak, Greenland

Editor, *QST:*

I received a letter today from the "G & M" Equipment Co. which made my blood boil. [Offering to purchase surplus equipment now in the possession of amateurs — *Ed.*] I don't know if there is anything you can do about it, but I would like to see something published to warn unsuspecting amateurs, and to prevent the spread of rumors. Apparently this letter was mailed to all hams on the West Coast at their call book address.

They imply that the hams will probably be put off the air this spring because of a war, so hams should sell their equipment — "Cash-in while you can and do your bit at the same time."

Their statement that our allies urgently need our equipment also rubs me the wrong way. If such a need was as urgent as they say, I am sure the League would make a public announcement and have a drive to collect the equipment. It certainly would not be left to one unheard-of company to take care of the matter.

To top it off, they request that you charge them as low a price as possible for your equipment (so that they can make as much profit as possible), and close the letter with the statement, "There is no profit in war." How appealing!

— Robert W. Hayes, W6AAW/OX3MC

QST

911 Green St., West Palm Beach, Fla.

Editor, *QST:*

Congratulations on another fine business *QST!* I got a big jolt out of reading the "letters to the editor" concerning the article "Numerology and Amateur Radio." Ha, ha! April fools never die.

— Beverley Cavender, W4CKB

---

74 Smith St., Coventry, England

Editor, *QST:*

My weekly meat ration of approximately 10¢ worth I freely donate to the initials G. G. His articles on screen modulation are classics in lucidity and exposition. Technical Topics are technically the tops.

When I read of some of the W hams beefing about the cost of *QST*, I see red. Once a month I have to do battle to obtain a copy and all I can say is that the effort is worth it. As you know, it costs a darned sight more here than it does in the States.

Finally, may I say that *QST* has been directly responsible for many G stations still being on the air by virtue of your also excellent articles on TVI suppression.

— John H. Williams, G8DXF

5326 Glasgow Court, Los Angeles 45, Calif.

Editor, *QST:*

A word of thanks and appreciation for our wonderful magazine, despite some letters you print to the contrary. As long as I can scrape up $4 a year, as long as I am an active ham, and as long as *QST* maintains its present character, I for one will be a devoted and appreciative reader. NUTS TO THE CRANKS!

— Edgar K. Hill, W6WMQ

DX CONTEST

702 Oak St., San Francisco, Calif.

Editor, *QST:*

A hearty second to W9PPH's motion in April *QST* regarding the ARRL DX contest. I can't completely agree with him regarding the parts skill and power play in the SS, where I believe skill is still the deciding factor rather than high power. But such is certainly not the case in the DX affair where the minority with "conservative" kilowatts and beams usually succeed in making a couple of pretty frustrating week ends for the 6L6-807 gang.

Probably the best and fairest solution would be along the lines suggested by W9PPH — setting aside a certain small portion of the contest period for operation at power inputs of less than 100 watts. I'm sure that most of the QRO boys (many of whom are running high power in self defense) would coöperate fully in such a plan.

— John P. Smith, W6GXH

WELCOME, NOVICE!

1087 Ashmount Ave., Oakland 10, Calif

Editor, *QST:*

Congrats on the fine one-tube transmitter in the May issue of *QST*. . . . As soon as I get my Novice ticket, I'll write and tell you how she runs.

— George Ingraham

1338 Washtenaw, Ann Arbor, Mich.

Editor, *QST:*

Tonight I listened to W1AW's slow-speed code practice for the first time. It's wonderful! I got all of the 5-w.p.m., 90% of the 7½-w.p.m., and about 75% of the 10-w.p.m. transmissions. In addition, I took it all down on my tape recorder so as to be able to play it back for a check on my copy and for further practice. Believe me, I will be with you every night from now on. . . .

— Jerome S. Miller

---

716 West 1st St., El Dorado, Kans.

Editor, *QST:*

I think *QST* should be congratulated on its FB article entitled "Welcome, Novice License Candidates" which appeared in Operating News of April *QST*. It gives the would-be hams like me a "boost."

I am fifteen years old, and I hope to pass the FCC ex-

(Continued on page 106)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
JOHN E. CANN, W1RWS, Asst. Comm. Mgr., C.W.
GEORGE HART, W1NJM, Natl. Emerg. Coördinator

J. A. MOSKEY, W1JMY, Deputy Comm. Mgr.
L. G. McCOY, W1ICP, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, Administrative Aide

Advice to the Novice. Here we are . . . July, and the stage is all set for many of us to ask FCC to give us the questions, and follow through by presenting us with our Novice Class amateur ticket. If you have followed W1AW's practice and read the material, pages 42–45, June *QST*, on the FCC questions that may be asked, this first license should be no problem. *Next* to get the "One-Tuber" or other transmitter on the air and start communicating with other Novices and Old Timers in the 3700–3750 kc. frequencies.

By practical ham operation several periods a week from our own station *in this band* we can do most to advance our code speed and absorb the procedure know-how of the many experienced operators who work consistently in this band. Eighty meters offers a lot of fine QSOs at good distances as well as new states, traffic-exchange possibilities, and rag-chewing galore, in which we can tell about our stations and find out about others. To some extent our amateur life is what we make it. Let us give honest RST (signal) reports and hope to receive the same. It is recommended that we Novices operate *regularly* with our new crystal-controlled rig on the 80-meter band but at the same time we do this let's keep an ear on the progressively higher speeds of practice material sent from W1AW. The whole thought behind the Novice License is that, in a brief twelve months, the fun of engaging in operating will automatically advance our code to levels of 13 w.p.m. and higher. We must in that period (which will pass all too soon) graduate upward to hold a full-fledged General Class amateur ticket! With this goal in mind you and I are *not* going to be diverted unduly to other aspects of Novice work. Attractive though these may be, if they prejudice the big push to get our operator license that carries the privilege of using *all* the amateur bands, they are not for us.

We are *not* required, by any means, to wait twelve months to take the FCC examination for the General Class Amateur License if we can qualify earlier. For most fun and progress in communications technique we first get fixed up with Novice privileges as quickly as possible. We then keep operating and studying for the ticket that lets us work all bands.

The League has an Operating Aid that is available without charge to holders of Novice or Technician Amateur Licenses. You will want it as soon as you are on the air. It is a printed Signal Reporting Scale in a form convenient for posting in your operating position. For your ready reference this will be gladly forwarded to you without charge as soon as you get that new license. Send a radio message or postal card to ARRL giving your Novice call and address; ask for the ARRL Operating Aid card which gives the RST Signal Reporting Scale for station posting.

W1AW Summer Schedule . . . Earlier Practice Transmissions. Elsewhere in these columns you will find the full W1AW Summer Operating Schedule. In the "general periods" the station is open for a call from any individual amateur on the frequency indicated. By changing as of July 1st to operate on *Daylight Saving Time*, all the bulletin and practice transmissions will be received *one hour earlier* than you may have been accustomed to receiving them during June.

W1AW is continuing to transmit an hour of code practice nightly, simultaneously on 1887, 3555, 7215, 14,100 kc., 52 and 146 Mc. All code students should take advantage of the early and late bulletin transmission periods in addition to the designated *practice* times. Four days a week are now devoted to the slow-speed program. Effective July 1st the highest speed transmitted in this bracket will be 13 (instead of 15) w.p.m. You can submit 10-w.p.m. copy made on designated once-a-month Qualifying Runs for official ARRL certification of this speed. On the three other weekdays, 15–35 w.p.m. tapes are sent as practice for those working for the higher ARRL Code Proficiency Awards, available after the monthly qualifying run. It is recommended that all going up for FCC examinations at 13 w.p.m. *make sure they can copy the 15 w.p.m.* transmissions! Many an operator has failed (by two or three words) of doing his best in a test because of nervousness when taking the exams.

Days	*W1AW Speeds*	*Time Practice Starts:*
Sat., Sun., Tues., Thurs.	5, 7½, 10, 13 w.p.m.	Sat. 8 P.M. EDST; Sun., Tues., Thurs. 9:30 P.M. EDST
Mon., Wed., Fri.	15, 20, 25, 30, 35 w.p.m.	9:30 P.M. EDST (8:30 P.M. CDST, 6:30 P.M. PDST)

Register in the AREC for Civil Defense. ARRL is solidly behind the plans going forward for our participation in civil defense communications work under the RACES regulations, for which the prospective provisions were discussed in Apr. '51 *QST*, p. 71. The new official FCDA

advisory booklet, "Control Centers," illustrates the pattern for wire and radio stand-by communications at community level. This explains that the Radio Amateur Civil Emergency Service will provide mobile radio units and stations working in the ear-marked frequency segments as required. Stand-by radio service is diagrammed for use between control centers, district warden command posts, reconnaissance cars, etc. ARRL SECs and ECs have more detailed information based on this FCDA Advisory Bulletin as received from ARRL. *Every licensed amateur who has not already done so is requested to register with the nearest ARRL Emergency Coördinator. This is the best way to permit all amateurs and amateur service groups to be fitted into official civil defense plans and any natural disaster emergency communication requirement. Let us build the Amateur Radio Emergency Corps to the greatest strength possible. Each individual registered in AREC may be acquainted by his EC with official FCDA information. It is planned to follow FCDA and RACES developments as closely as possible in EC-SEC ARRL bulletins on FCDA communication plans as these become available.*

Summer Nets. The organized method of general traffic exchange between all ARRL sections (National Traffic System) will continue to operate insofar as feasible for summer work as noted under Traffic Topics, this issue. Section Nets are in few cases discontinuing, and in many cases continuing to the extent traffic volume requires and operator support is available. (This may be the time your section net needs your assistance most, so report as often as you can. Drop a line to ARRL for the Net Directory if you wish net-frequency information.) Except for a couple of vacation weeks, there remains the same pleasure in traffic operating that inspires activity at other seasons and many of us will report to NCS at customary hours even where a net has put up the vacation sign. GI traffic through NTS channels will continue to be routed via PAN; also by K4USA-K4AF, the Presidio (S.F.) and MARS connections. May we remind netters, 'phone or c.w., to be especially *punctual* during summer operations. Some networks will finish work in a shorter period when traffic volume is low so it is important to be right on time to pick up the traffic for one's own station as outlet or to put some on the net!

CD Parties: C.W., July 21st–22nd; 'Phone, Aug. 11th–12th. The ARRL appointment family will get together these dates for the quarterly radio tests. Report forms for the separate 'phone and c.w. periods will be in the mail to all appointment holders about the time this *QST* is in your hands. To avoid conflict of dates with the National Convention (Seattle), July 27th–28th–29th, and LO-Nite, Aug. 4th, the 'phone activity has been scheduled for Aug. 11th–12th. Appointees home or vacationing can look in on one or both summer radio parties for some snappy and pleasurable c.w. and 'phone operating. Full members of ARRL without present appointment identification are invited to drop a postal card or radiogram to Headquarters for *Operating an Amateur Radio Station* which gives the appointment qualifications observed by SCMs in making appointment. Confirmed traffic handlers and those with good 'phone stations are invited to contact SCMs about ORS or OPS appointment, respectively.

Hope your work in the ARRL FD just completed made it the "best ever." Don't forget to get a full measure of fun and use from those portable and mobile amateur rigs during this vacation season. BCNU at Seattle!

—*F. E. H.*

MEET THE SCMs

Kentucky's new SCM, Ira W. Lyle, jr., W4KKG, has been in the amateur game since 1925, obtaining his first license in December, 1929. In addition to his present call he has held the calls W9DKD and W9KKG, and in 1932–33 was chief operator of the University of Kentucky station, W9JL.

An all-around ham, he likes to work DX, participate in ARRL contests, handle traffic, report into nets, rag-chew, experiment, build and rebuild, and help new hams get started on the air. He has held appointments as ORS, OBS, and OES and is a member of the Swedish Sending Amateurs, SM8-1748, the Greater Cincinnati Amateur Radio Council, and the Amateur Radio Transmitting Society (Louisville), of which he is a past-president and a present member of the board of directors. He earned a Public Service certificate for his emergency traffic-handling during the big freeze of February, 1951, and also did noteworthy work in the 1937 Ohio River flood.

When his new home was constructed, SCM Lyle had a room built especially for the shack which houses a Collins 310B driving a pair of 4-125As at 1 kw. on all bands, and VHF-152A converter and SX-25 receiver. Antennas in regular use are rotary beams for 10 and 20, doublets on 40 and 80 meters.

Formerly supervisor of mobile radiotelephone repair and installation, he is now division plant maintenance supervisor for the Southern Bell Tel. & Tel. Co. His favorite sports are football and basketball; his secondary hobby is his home and garden at Harmonic Acres.

A.R.R.L. ACTIVITIES CALENDAR

July 13th: CP Qualifying Run — W6OWP
July 19th: CP Qualifying Run — W1AW, WØTQD
July 21st–22nd: CD QSO Party (c.w.)
Aug. 9th: CP Qualifying Run — W6OWP
Aug. 11th–12th: CD QSO Party ('phone)
Aug. 20th: CP Qualifying Run — W1AW, WØTQD
Sept. 8th: CP Qualifying Run — W6OWP
Sept. 14th: CP Qualifying Run — W1AW, WØTQD
Sept. 22nd–23rd: V.H.F. Contest
Oct. 7th: CP Qualifying Run — W6OWP
Oct. 13th: Simulated Emergency Test
Oct. 17th: CP Qualifying Run — W1AW, WØTQD
Oct. 20th–21st: CD QSO Party (c.w.)
Oct. 27th–28th: CD QSO Party ('phone)
Nov. 5th: CP Qualifying Run — W6OWP
Nov. 20th: CP Qualifying Run — W1AW, WØTQD
Nov. 17th–18th, 24th–25th: Sweepstakes Contest

Someone recently asked us if the League was behind civil defense. A surprising inquiry indeed! What was even more surprising was the fact that this person was an active League official and long-time AREC organizer. When we expressed our amazement at his inquiry, he replied that he knew we were behind civil defense, but that we had never said so in so many words, and he thought such an expression was needed.

We have always been an exponent of the old adage that "Actions speak louder than words." True, ARRL has never officially declared that it is supporting the civil defense effort communications-wise. All we have done is to be instrumental in setting aside frequencies for civil defense use by amateurs in six amateur bands (see insert facing p. 32, Feb. 1951 *QST*), write editorially on the subject (see p. 71, Apr. 1951 *QST*, p. 61, Mar. *QST*), write bulletins to ARRL officials and appointees on the subject, and maintain contact by telephone and in person with FCDA and FCC officials in Washington to follow the progress (and report to ECs) of the Radio Amateur Civil Emergency Service. This is not to mention the voluminous correspondence and attendance at other civil defense meetings and drills, such as those which our Communications Manager visited on a recent field trip.

It is hard to understand why anyone should doubt that ARRL is in support of civil defense communications, but if anyone does — forget it. Civil defense communications is not only the primary job, these days, of the AREC, but of the radio amateur fraternity as a whole. Civil defense communication as a whole automatically embraces the AREC as one of the civilian agencies which can be of service — and the AREC recognizes civil defense as its primary (but not its only) responsibility in these days of tension. The two are not identical, but they do overlap to a considerable extent, and more so as we move closer to world conflict. Your registration in AREC will give you maximum opportunity to participate in and get behind the support *your ARRL* is giving the civil defense communications effort, whether you are a League member or not.

—•••—

On April 8th a group of St. Paul and Minneapolis hams were rag-chewing on 10-meter 'phone when suddenly WØQOM on a fast bug appeared on the frequency to say that WØBBY was requesting mobile communication at Mankato and St. Peter to aid in patrolling the flood area. WØSJK alerted the Minneapolis group and WØPDN the St. Paul gang, and the next day WØs AJS BOL DWA MXC OWX PDN SJK SMT SUZ UYJ YBM and YLZ left to render assistance.

NCS was set up at the armory at Mankato on 10- and 75-meter 'phone, using the call WØOGU. The 10-meter rig was converted on the spot from stand-by police equipment, and the 75-meter rig belonged to the Minneapolis Radio Club. At St. Peter, 10 miles north of Mankato, WØs BVH DWA DWR HKF NJZ PAL QYZ RAG and SUZ operated a similar set-up at the armory there, together with their mobile rigs. State Guard amphibious ducks operated in the flooded area between the two towns. Two 10-meter pack sets were installed in the ducks to provide communication with the base stations and with the various mobiles who were acting as auxiliary police cars accompanied by auxiliary police.

The police and gas company set up their base stations adjacent to the 10- and 75-meter station at the armory so that all activities were coördinated in the same room.

After the situation was under control a broadcast from plane to ground over the flooded area was rebroadcast over a local broadcast station. Ham pack sets were used to provide this communication. The need for assistance from the hams was terminated about 5 P.M. that day. Also reported active were WØs ABD ANY BWR GUS IFS IRM ITQ LVG MJZ OGU OPA ORJ OWX PAQ PDN PZT RPT TEL UGG UMD VEF VER and ZME. — *WØSMT*

—•••—

Approximately forty-five minutes after the crash of an airliner near Fort Wayne, Ind., on Apr. 28th, EC W9EOG was active from his mobile rig. Within a few minutes a number of units were under way to the crash location and other units held in town for reserve. At this same time a fixed station was put into action as a net control station, with two fixed stations to help him. As soon as the first mobile unit arrived on the scene messages began to flow back to Fort Wayne and to other units on the way out. During the evening approximately fifty messages were handled. The Fort Wayne Radio Club's 2-kw. generator provided light to the wreckage. Our group was released at 0345 when the investigation was closed for the night.

The mobile group went into action again from 1810 to 0048 Monday night April 30th to assist the CAP. This same service was provided again on May 1st, from 1800 to 2230.

Samples of the type of traffic by our group were the procurement of boots for the rescue workers, securing floodlights, messages for the radio stations and the Red Cross, procurement of electric lanterns and messages for deputy sheriffs. The mobile groups also helped obtain vehicles to carry the dead from the wreckage to the road.

Our mobile net was formed about six months ago and this was the first actual emergency for which we provided communication. Although we had several practice maneuvers, we learned very much during this ordeal. Those who took part: WØs ABP BRN BRW CHL CLF CXP DKS EOG FJT FXV GPL GZV JJI JRR KFS KPM LIJ LXI MGV PC PMA PMC PRO QEK UDD UUN and ZEJ.

— *WØBRW*

COÖPERATION WITH U. S. WEATHER BUREAU FLOOD FORECASTING SERVICE

A plan calling for coöperation of amateur radio stations with U. S. Weather Bureau observers in eighty-five River Districts is being made nationwide. The plan follows a pattern which has been tested and become well established in the Ohio, Susquehanna, and Potomac River Valley areas. The proven operational features developed in these areas have been incorporated in a "Manual of Operations," which will serve as a guide to the establishment of similar facilities in other U. S. River Districts. The U. S. Weather Bureau hereby invites serious consideration by every active amateur to participation in this program.

One of the functions of the Bureau is to issue flood warnings to the public. To accomplish this service there are 85 River Districts, with a Weather Bureau Office in each designated as River District Office, which means that in

This picture was taken just after a successful crossing of a half-mile-long stretch of flooded and undermined highway, to deliver a 10-meter pack set which was badly needed at Mankato, Minn., for use in patrol work on an amphibious "duck." Shown grouped around the pack set from left to right are WØs HKF, SUZ and YBM. Standing at the rear of his mobile station wagon is WØAJS. (*Photo by WØSMT*)

addition to the general weather service, river information and flood forecasts are also provided by that office. Certain large basins have River Forecast Centers where forecasts for the entire basin are formulated and furnished to River District Offices within the area. In order to facilitate the formulation of river forecasts a network of substations exists in each River District. These are manned by observers who observe amounts of fallen precipitation and the height of the water in river channels, which they report to River District Offices. Normally, this is done by telephone, teletype or mail. When a flood or other natural disaster strikes and accurate information is most needed, normal means of communication are likely to be disrupted. Giving the field weather observer a definite emergency communications link to look to in such times would save much time in the issuance of the warnings. Both life and property are at stake in many of these critical situations.

The framework of the League organization provides the way to such a program on a permanently effective basis. Procedure is for Weather Bureau River District Office personnel to call upon the SCM in the section most nearly matching the geographical location of the River District. The SCM may when requested appoint a Regional ARRL Emergency Coördinator to work with designated Weather Bureau personnel in that area. Such a Coördinator will interpret for Weather Bureau personnel the potentialities of amateur radio in the particular watershed. Assistance in organizing and operating any net will be provided by the Bureau's district office. Procedures and suggestions contained in the "Manual of Operations" developed by the Washington River District and the Potomac-Rappahannock Valley Net will be available to the Coördinator through the official in charge of the River District Office, all of whom are being alerted for this program.

Existing amateur nets in many cases form an immediately available source of the coverage desired. It is sincerely hoped that these nets will add to their routines the relatively small amount of additional procedure necessary to provide uniform handling of emergency Weather Bureau traffic involved in this plan. Where traffic handling nets are operating, about the only problem involved is the establishment of a recognized line of contact between the amateur and the Weather Bureau Field Observer to insure the requisite coöperation.

You'll be hearing more about this program. Let's hear from you when the time comes. — *W3FPQ, REC, PRVN*
— *Bennett Swenson, U8WB*

CODE-PROFICIENCY AWARDS

Have you received an ARRL Code Proficiency Certificate yet? Twice each month special transmissions are made to enable you to qualify for the award. The next qualifying run from W1AW/WØTQD will be made on July 19th at 2130 EDST. Identical texts will be sent simultaneously by automatic transmitters. Frequencies of transmission from W1AW will be 1887, 3555, 7120, 14,100, 28,060, 52,000 and 146,000 kc. WØTQD will transmit on 3534 kc. The next qualifying run *from W6OWP* only will be transmitted on July 13th at 2100 PST on 3590 and 7248 kc.

Any person may apply; neither ARRL membership nor an amateur license is required. Send copies of *all* qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the five speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening, Monday through Friday, at 2130 EDST. References to texts used on several of the transmissions are given below. These make it possible to check your copy. To get sending practice hook up your own key and busser and attempt to send in step with W1AW.

Date	Subject of Practice Text from May *QST*
July 3rd:	*D.S.R.C. Radiotelephony*, p. 11
July 6th:	*The Novice One-Tuber*, p. 18
July 9th:	*A Linear Beat-Frequency Oscillator* . . . , p. 26
July 11th:	*The Monitone — Model 1951B*, p. 29
July 17th:	*Awards*, p. 32
July 20th:	*A Civil Defense Portable*, p. 35
July 23rd:	*The C.W. Man's "Selectoject,"* p. 54
July 26th:	*A Planned Station* . . . , p. 58
July 31st:	*Chasing the Tennessee Valley Indians* . . . , p. 65

BRIEFS

In connection with the Bristol Festival of Britain celebrations, an amateur station will be set up at the "Our Way of Life" exhibition at the Memorial Ground, Horfield, Bristol, from July 7th to 21st. The call G6YA/A will be used on 1.7, 3.5, 7 and 14 Mc. Operation will be almost exclusively on 'phone. Members of the Bristol Group of RSGB will man the station. In addition to general contacts, they will endeavor to work as many amateur stations as possible in the various "Bristols of the U. S." Special Festival of Britain QSL cards will be sent to all stations worked. A cordial welcome is extended to visitors, especially hams from the U. S. and Canada, and QSL cards brought to confirm personal QSOs at the exhibition will be greatly appreciated by the committee in charge of operations at G6YA/A.

—···—

SS Correction: The score of W8AJW, 42,043 points, was inadvertently credited to W8NOH in the list of call area leaders published on page 63 of May *QST*. We hasten to credit W8AJW with the highest 'phone score entered by participants in the W8 area, and offer our sincere apologies for the error.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....238	W3BES.....231	W2BXA.....227
W8HGW.....236	W6ENV.....229	W6EBG.....224
W6VFR.....231	G2PL.....228	W3CPV.....223
	WØYXO.....227	

RADIOTELEPHONE

W1FH.....200	XE1AC.....194	WØRBI.....181
LU6AJ.....196	PY2CK.....190	W2BXA.....180
VQ4ERR.....195	W8HGW.....189	W1JCX.....177
	W6DI.....181	

From April 15 to May 15, 1951, DXCC certificates and endorsements based on postwar contacts with 100 or more countries have been issued to the amateurs listed below.

NEW MEMBERS

TA3GVU.....135	G3DDK.....106	G5UF.....101
FØAH.....122	ZL1RD.....105	W3OPM.....101
W6EAE.....122	VK2PV.....105	VE1EK.....101
W8DFQ.....120	YV5AE.....103	SM3ARE.....100
DL7AB.....119	DL1GU.....103	ON4PA.....100
ON4SS.....113	KG6GC.....102	W2QJM.....100
OX3MG.....113	GM3DHD..101	

RADIOTELEPHONE

DL1LH.....108	SM5WJ.....105	EA2CQ.....100

ENDORSEMENTS

W6GRL.....222	W1MB.....160	SM5WJ.....123
G6RH.....220	W6CIS.....160	EA4CR.....122
LU6DJX.....212	W5CKY.....143	OZ3Y.....122
W6SYG.....210	PY4IE.....143	W5NW.....121
CE3AG.....210	W3GTP.....140	CP5EK.....121
KH6BA.....201	ZS2AG.....140	W6NGA.....121
ZS2X.....201	W6NTR.....139	W2ATE.....120
VK2NS.....194	ZL3LR.....138	W2ABS.....120
W3GRF.....193	W1BFT.....136	W4BGO.....119
W6UCX.....190	W8IB.....136	VE5QZ.....117
W9MXX.....184	G3AIM.....133	W6MEL.....114
W8HFE.....175	W2AW.....133	G6QX.....112
W3BXE.....174	VK5KO.....132	W9AHP.....111
W9TQL.....170	I1AMU.....132	W1RWS.....111
W5EGK.....163	W9HUZ.....132	W5KWY.....110
W4VE.....161	G2BQC.....130	W4KWC.....110
W6BVM.....160	W5KUJ.....130	G3CMB/A..110
	HP1BR.....130	

RADIOTELEPHONE

G6RH.....160	ZL2GX.....150	OZ7TS.....121
G6IG.....160	W2AKX.....140	WØANF.....120
W1MB.....160	I1AMU.....130	VE7MS.....111
ZS6BW.....160	W2ZX.....130	F8SK.....111
W8BF.....160	ZS1DO.....122	CM9AA.....111
ZL1HY.....160	W3KT.....122	W3GHD.....110

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for April traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3CUL	178	1344	973	265	2760
W4PL	10	1244	1129	115	2498
W9TQD	0	912	905	7	1824
W9ZJO	16	899	886	23	1824
W6KYV	84	801	216	585	1686
W7IOQ	94	640	548	138	1420
KG6FAA	604	403	248	155	1410
W9ILH	24	650	619	34	1327
W6UHY	6	659	646	13	1324
JA3AC	452	389	250	133	1224
W7CZY	5	577	569	8	1159
W5LSN	1	556	555	3	1115
W6JZ	13	546	496	25	1080
W6GYH	14	517	407	120	1058
W5GZU	5	434	403	28	870
W2RUF	28	433	321	44	826
W6BAM	42	391	265	128	826
W5PTV	9	402	384	28	823
W6SD/6	803	7	2	5	817
W9BAF	15	358	330	23	726
W6CKO	607	55	38	15	715
K9FAE	0	368	306	31	705
K4WAR	320	185	110	75	690
W9AY	11	333	320	23	687
W3NRE	16	314	282	33	645
W9QXO	6	318	286	29	639
W8RJC	24	291	276	6	597
W9ESJ	41	252	221	31	545
W3UF	36	230	241	15	522
W8AUJ	12	260	234	4	510
W9SCA	7	264	213	25	509
W7FRU	3	253	235	16	507
Late Report					
W6DTW (Dec.)	9	0	2394	6	2409

The following made the BPL for 100 or more *originations-plus-deliveries:*

JA4AG	330	W5PGF	135
K4AIR	250	W9YIX	125
W6CMN	223	K4WBG	125
JA4AI	186	W2VNJ	117
W2PRE	159	W6BHG	111
W7TH	108		
Late Reports			
JA4AI (Mar.)	338		
JA4AI (Feb.)	213		
JA4AI (Jan.)	132		

A message total of 500 or more or 100 or more *originations-plus-deliveries* will put you in line for a place in the BPL. The Brass Pounders League is open to all operators who qualify for this monthly listing.

TRAFFIC TOPICS

GI traffic has come to be quite an important problem in traffic-handling circles these days. In addition to its obvious morale-building qualities, it is responsible for getting many new amateurs into the traffic game, and along with the influx of GI traffic has also come a number of special nets and schedules to handle this traffic. W7CZY, W7IOQ and W6CE at one time had special schedules with JA and KG stations to handle it via the National Traffic System, and these arrangements still exist. You can put your GI traffic into your NTS net. TLAP has means of handling GI traffic, also, but we have no details on this. Down on the 20-meter 'phone band W6HQX runs a daily schedule with JA2MB (14,255 kc., 1100 and 1600 CST) for handling of this type of traffic, which is then relayed east through K5WAC and W9ILH. There are doubtless other special schedules which have been set up which we don't know about. How about letting us in on them?

In the other direction, we have long needed a reliable outlet into and out of GI Germany. DL4SV handled some such traffic, then disappeared. Others have made "stabs" at it, but somehow or other never stuck to it for very long. MARS can handle some traffic to out-of-state places such as the above-mentioned and Canal Zone, Puerto Rico, Alaska, Hawaii, etc., and quite often amateurs route their traffic this way. But we ought to be able to do it by ham radio on ham frequencies. It is often not possible for out-of-state stations to report into NTS or other regular Stateside amateur nets, and special schedules are usually the only answer. Anyone having or making such special schedules would do well to inform the manager of his local section and/or NTS regional net so that traffic could be properly routed without a lot of delay trying to find out who could take care of such traffic. Let's get organized, fellows, and let each hand know what the other is doing.

—•••—

If you will take a look at the BPL this month, you will note that a slight change has been made. Instead of listing back totals with an asterisk, we are listing them separately so that they will not compete with totals for the proper month. There was some question as to whether we should list them at all, but the proponents of "better late than never" finally won out — especially in view of the fact that late reporting is sometimes the fault of the SCM rather than the individual reporter. Another reason for late appearance in the BPL is that the breakdown of traffic as received is sometimes obviously incorrect and has to be corrected by the reporter or SCM before it can appear.

If individual traffickers will report their traffic to their SCM promptly on the first of each month, and *report it right*, it will help your SCM, help us, and *help you* to see that your efforts are properly credited at the proper time. In counting traffic totals, note particularly that, unlike the old system, a single message can be counted *only once* in any one category. *Originated* and *relayed* messages are those sent by radio from your station. *Received* points are counted for all messages received by radio. *Delivered* points are counted for all messages delivered, *not* by radio but by mail, telephone or in person — and you cannot claim a point for delivery of a message addressed to yourself or a member of your immediate household. See *Operating an Amateur Radio Station* for complete details. If you're a League member, we'll supply you with a copy of this booklet free.

—•••—

National Traffic System. Most of the NTS's 11 regional nets and all 3 area nets have announced plans for continuing operation throughout the summer months. This is a most encouraging development, and we hope that those which have not yet made summer plans will have done so by the time this appears in print.

April reports were received from eight NTS regional and area nets. Here are the traffic figures:

Net	*Sessions*	*Tfc*	*High*	*Low*	*Average*	*Most Consistent*
QIN (Ind.)	47	817	46	1	17	
2RN	21	258	38	5	13	NYS
RN7	41	296	24	1	7	Idaho
8RN	21	40	6	0	2	Ohio
TEN	21	913	121	6	43	Minn., Nebr., Ia.
TRN	40	45	9	0	1	Ont.
EAN	21	899	79	24	43	All 100%
PAN	21	881	111	13	44	All 100%

NTS is handling its share of the GI traffic coming from the west (i.e., the East). Note (above) that some special schedules are also being set up for this purpose. If the system is handling all it can, the special schedules are all to the good. But let's make sure that NTS is doing its share (or more) of this vital work.

First Regional Net (1RN): Changed to summer schedule May 23rd. Meets Mon., Wed., Fri., 1845 EST, 3610 kc.

Second Regional Net (2RN): W2PRE says 2RN *will* operate during the summer, on its present schedule, which is Mon.–Fri. at 1845 EST on 3690 kc. W2s RUF QLF VNJ and ZI have been awarded certificates.

Third Regional Net (3RN): Time changed to one hour earlier beginning April 30th; both sessions are still being conducted. 3RN is now operating at 1845 and 2030 EST, Monday through Friday on 3590 kc.

Fourth Regional Net (4RN): 4RN is now operating one session per night, Monday through Friday, at 2030 EST on 3615. W4ANK hopes to keep going all summer, and hang the QRN — let's give him some support, eh?

Fifth Regional Net (RN5): Negotiations are still going on for a new net manager. Meanwhile, we hear nothing of RN5 operations or plans for the summer.

Seventh Regional Net (RN7): Participation is needed from Wyoming, Saskatchewan, Alberta and Alaska. Is no one interested in putting those sections on the map, NTS-wise? RN7 now operates at 1845 and 2030 PST, Mon.–Sat., on 3575 kc., and hopes to continue this schedule through the summer months.

Eighth Regional Net (8RN): Starting June 1st, 8RN will operate only one session, 2030 EST, Mon.–Fri., 3530 kc.

Ninth Regional Net (9RN): W4BAZ has resigned because of the pressure of other activities. No one has been chosen to succeed him yet, but W4BAZ indicates that most of the 9RN participants are anxious to continue operation during the summer, so a new manager will be appointed soon.

Tenth Regional Net (TEN): W9SCA says they are still experiencing QRM from Canadian 'phones and are considering a move to 3560 kc.

Thirteenth Regional Net (TRN): Although most of the region covered by TRN stays on standard time, the net is moving its operation one hour earlier, to 1845 and 2030 EST, Monday through Friday on 3675 kc. This is an "interim" schedule, with summer plans still to be completed. VE1OM now has a TRN certificate.

Eastern Area Net (EAN): W2CLL changed his mind about resigning and intends to carry on as EAN manager. The net now operates at 1930 EST, Mon.–Fri., on 3705 kc. The winter season just past has been one of the worst in the books for erratic conditions. EAN certificates are hard to come by, but those issued really mean something.

Pacific Area Net (PAN): PAN now operates on 7207.5 kc. Mon. through Fri. at 1930 PST, and expects to be on that schedule until fall. WØZJO is still doing most of the NCSing, with WØZWL and WØAY alternating for him Tuesday and Thursday nights respectively. He needs more help in this respect. How about it, you West Coasters?

W1AW SUMMER SCHEDULE

(July 1 through August 31, 1951)

(All times given are Eastern Daylight Saving Time)

*Operating-Visiting Hours:**
Monday through Friday: 1300–0100 (following day)
Saturday: 1900–0230 (Sunday)
Sunday: 1500–2230

* *Exceptions:* On week days from July 5th through August 7th the station will not open until 1900, to provide for attendants' vacations. W1AW will be closed from 0100 July 4th to 1900 July 5th in observance of the Independence Day holiday. A mimeographed local map showing how to get from main state highways (or from Hq. office) to W1AW will be sent to amateurs advising their intention to visit the station.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules:

Frequencies:
C.W.: 1887, 3555, 7120, 14,100, 52,000, 146,000 kc.
'Phone: 1887, 3950, 14,280, 52,000, 146,000 kc.

Times:
Sunday through Friday, 2000 by c.w., 2100 by 'phone.
Monday through Saturday, 2330 by 'phone, 2400 by c.w.

General Operation: Use the chart below for determining times and frequencies for W1AW general contact with any amateur. Note that since the schedule is organized in EDST, the operation between 0000 and 0100 each day will fall in the evening of the previous day in western time zones.

On Saturdays and Sundays during which official ARRL activities are being conducted, W1AW will forego general-contact schedules in favor of participation in the activity concerned (see Activities Calendar).

Code-Proficiency Program: Practice transmissions at 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and at 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday are made on the above-listed frequencies. Code practice starts at 2000 on Saturday, at 2130 all other days. Approximately 10 minutes' practice is given at each speed. Next certificate qualifying run from W1AW and WØTQD is scheduled for June 19th; from W6OWP, June 8th.

The station staff:
J. M. Powell, W1QIS, "mp"
J. I. Barrett, W4KVM, "jim"

APRIL CD QSO PARTIES

Listed below are the highest claimed scores for the April C.W. and 'Phone CD QSO Parties. The figures following each call indicate the claimed scores, number of contacts and number of ARRL sections worked. Complete results will appear in the July CD Bulletin.

C.W.

W6BES	188,906–358–58	W3ADE	52,000–201–50
W4KFC	130,235–420–61	W7UTM	51,815–130–43
W6YHM	112,280–220–56	W8DPE	51,220–190–52
W3VES	103,545–344–59	W2NIY	49,290–180–53
W1EOB	102,370–346–58	W4AYV	48,100–180–52
W6YYN	93,822–179–57	W4PNK	47,520–216–44
W4BZE	82,305–274–59	WØATA	47,430–186–51
W7KWC	81,243–177–51	W7PUM	47,232–128–41
W9NH	68,880–240–56	W2ZVW	44,435–177–49
W1ODW	61,100–235–52	WØPHR	42,875–175–49
W7JU	58,604–129–49	W6NGC	41,805–101–45
W5EEF	55,520–148–48	W5AQE	41,340–153–52
W7MLL	55,200–125–48	WØIC	41,310–155–51
W4NH	54,270–201–54	W7OYJ	41,202–109–42
W3BIP	54,250–210–50	W3NRE	41,080–158–52
W1CRW	52,675–215–49	W8GSJ/2	40,920–179–44
W9JTX	52,500–204–50	W3FQB	40,420–165–47
W1AYC	52,425–233–45		

'PHONE

W1BFT	21,090–107–37	W6BES	9450– 35–27
W4FV	15,968– 80–32	W8NOH	8375– 62–25
W7KWC	15,840– 55–32	W1CRW	7410– 57–26
W1AW	12,320– 70–32	W4CKB	6670– 58–23
W4KFC	12,000– 73–30	W6CHV	6486– 28–23
W4NYN	10,850– 70–31		

W1AW GENERAL-CONTACT SCHEDULE

(In Effect July 1 to Aug. 31, 1951)

W1AW welcomes calls from *any* amateur station. Starting July 1st, W1AW will listen for calls in accordance with the following time-frequency chart.

Time (EDST)	*Sunday*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
0000–0100*	.....	.....	3555	7120	3950	7120	3555
1300–1400**	.....	28/29 Mc.	28/29 Mc.	28/29 Mc.	28/29 Mc.	28/29 Mc.	.....
1500–1600	.....	7120	14,100	7120	14,100	7120	.....
1600–1700	.....	14,280	7120	14,100	14,280	14,100	.....
1800–1900	.....	14,280	14,280	14,280	14,100	7120	.....
1900–1930	.....	3950	.....	3555	.....	14,280	.....
1930–2000	.....	14,100	.....	3555	.....	14,280	.....
2000–2100*	14,280	3555	14,100	14,100	7120	14,100	.....
2100–2130*	146 Mc.	51 Mc.	146 Mc.	51 Mc.	146 Mc.	51 Mc.	.....
2230–2300	.....	.....	1887	.....	1887	.....	.....
2300–2330	.....	.....	3555	.....	3950	.....	.....
2330–2400*	.....	3950	3950	3950	3950	3950	.....

* Starting time is approximate. General-contact period on stated frequency begins immediately following transmission of Official Bulletin, on c.w. at 0000 and 2000, on 'phone at 2100 and 2330.

** Operation will usually be conducted on 29,000-kc. 'phone, but 28,060-kc. c.w. will be used if activity is present on the c.w. portion of the band. In the event of no activity on this band, W1AW will conduct general contacts on either 14,100 or 14,280 kc. instead.

Station Activities

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, Jerry Mathis, W3BES — The W3BQ memorial station is nearing completion, according to EU. New officers of the Car-Le Radio Club are 8NZ, pres.; JPR, vice-pres.; AIW, secy.-treas.; OWP, act. mgr. NNV is working on 420 Mc. with an APS-13. The Lancaster Emergency Corps is building fifteen 144-Mc. mobile units. The PAC of RC will provide communication for the Delaware River speedboat races again this year. Many of the communities are supplying the AREC stations with gasoline-powered generators for emergency use. SQ is doing an outstanding job with overseas traffic and 'phone patches. CTJ has a new HRO-50 and a rebuilt beam. His first contact was with VTIAF. Good start! By the way, all communications relative to AREC should be addressed to ISE, our SEC. Traffic: W3CUL 2760, BIP 269, AXA 98, GJA 27, CAU 9.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, James W. John, W3OMN — On May 4th the Capitol Suburban Radio Club enjoyed a talk on antennas by AM. Field Day plans were projected. The Rock Creek Amateur Radio Assn. installed officers and featured a social session on April 13th. EUQ presented a talk on a 10-meter low-power transmitter for civil defense work at the April 27th meeting. Your SCM visited the Baltimore Amateur Radio Communications Society on April 16th, when Mr. Richard L. Snyder, jr., of the Ballistics Research Laboratory, Aberdeen Proving Grounds, presented an interesting talk on "Phases of Electronic Computers of Interest to Hams." Second Army Hamfest (conference) was held on May 6th at Fort George G. Meade, Md. The agenda included "MARS Frequency Allocations" and "Organization of Local Civil Defense Nets." NPW, amateur representative for civil defense in the District of Columbia, explained the c.d. planning for the District to the Washington Radio Club and Washington Mobile Club at their second meetings in April. Newly-elected officers of the Washington Mobile Club are MNR, pres.; NPW, traffic mgr.; PTS, secy.-treas. The Club membership now totals 46 active mobile units and 2 fixed control stations. The immediate project for the Club is the development of an emergency plan for operation until the civil defense communication is functioning. Primary coverage points are the hospitals in the District of Columbia. A number of members of the Club were out for the annual spring outing to the Skyland Drive where NPW worked 6CK, formerly 3CG, for an FB QSO. NOL and PQF received FCC inspections as a result of TVI. High-pass filters eliminated the interference. MO demonstrated to the satisfaction of all concerned that his powerful 20-watter was not causing TVI to 17 sets in a near-by apartment house. Activity on 420 Mc. is increasing in the section. AIR is usually monitoring 144 Mc. to establish contact on 420 Mc. PWB has a new 40-foot windmill tower at the highest point in the District of Columbia. LZY is trying out new 10- and 2-meter beams. In addition, his station is powered by a new 2½-kw. gasoline generator. COK is QRT until he is established in his new QTH. FQZ now is mobile with a new home-built transmitter and receiver. GZH has been transferred to Illinois. LGA passed his Class A examination. P. B. Longley, formerly 3FQR, has been appointed communication coördinator for Montgomery County, Md., civil defense. LSX is back on 7 Mc. after repairing the high-voltage supply. NL has installed additional "auto-calls" at PWI and MAX. Monitoring frequency is 29,640 kc. After 26 years on the air as an amateur FWP, whose first call was 9FZU, is beginning to feel like an "old-timer." The MDD Net on 3650 kc. will continue to operate during the summer on a three-day-per-week schedule, Mon., Wed., and Fri. at 7:30 P.M. EST. Daily operation of the Net will be resumed Sept. 17th. Traffic: W3UF 522, LZM 254, ECP 170, AKB 117, FWP 87, BWT 32, MCD 24, NNX 12, ONB 12, IZL 6, LSX 3, IL 2.

SOUTHERN NEW JERSEY — SCM, Dr. Luther M. Mkitarian, W2ASG — RFU, formerly 3CZM, states that he is endeavoring to activate the Greater Camden Radio Assn. and asks that all former members contact him. Our SEC, ORS, has moved to his new QTH, 8 Lawrence Ave., Barrington. Congratulations to DVRA for a very successful "Old Timer's Nite." Those who didn't attend missed an FB affair. ABJ's new QTH is Shore Road, Palermo. He is building a 420-Mc. rig. K2BG had 77 contacts during the last CD Party. ZYX has moved to Syracuse, N. Y. PAU has installed a new 144-Mc. rig in his brand-new car. BLR, ABJ, and UKS are keeping 160 meters alive in and around Ocean City. ZVW is high traffic man this month. Traffic: W22YX 206, ZI 143, ORS 61, K2BG 48, W2RG 40, ASG 9.

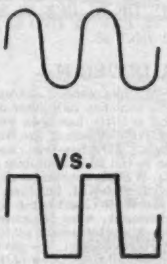
WESTERN NEW YORK — SCM, Harding A. Clark, W2PGT — SEC: SJV. RM: RUF. Over the past few years there has been much talk in connection with the idea of having New York State issue automobile registration plates with amateur station calls imprinted thereon. We learn that OPS has contacted Representative Richard Knauf, who also is a member of the Motor Vehicle Committee, regarding this matter. Mr. Knauf has agreed to sponsor such a Bill at the next meeting of the Legislature, and he suggests that each amateur write him a letter and send a copy of the letter to his own representative urging that such registration plates be issued. We understand that Mr. Knauf is active in civil defense activity and a word along this timely topic is suggested. Address your letters to Representative Richard H. Knauf, 80 Court St., Binghamton, N. Y. Your local newspaper can advise you the name and address of your local representative. Let's start those letters rolling TODAY. The Northern Onondaga County Volunteer Firemen's Association recently held an unannounced c.d. drill in various communities and called on amateurs in the area to provide communications. Those who performed outstanding work were NNT/mobile, HNH/mobile, and SBI. Are you prepared for such a drill? QHL has been appointed EC for Otsego County, FE is new EC for Steuben County, SBK is EC for Southern Chautauqua County, UMJ is EC for Corning, BYZ is Asst. EC for St. Lawrence County, RUT is Asst. EC for Oswego County, QJN and QCA are Asst. ECs for Oneida County. RUF, who carries a bug wherever she goes, is being heard on 3.8 Mc. FMH now is in California and works BLP to keep in touch with the gang "back East." PPY is running 100 watts on 144 Mc. while TBD and UDD are using crystal-controlled converters on this band. GFN makes his first traffic report. Traffic: W2RUF 826, DJF 158, RUT 83, BLO 77, SJV 60, DPL 54, PGT 40, RZP 34, ZHU 32, GFN 7.

WESTERN PENNSYLVANIA — SCM, Ernest J. Hlinsky, W3KWL — PTU finally got his Viking I rig going on 160,75, and 40 meters. LSS reports nice comments on plug for auto license plates. IYR is moving to the Cleveland Area. State College station, YA, is rebuilding to a band-switching 1-kw. rig. AER says DX is picking up very slowly. RIS has a new QTH at Newtinsburg. ODU's six hours in the CD Party netted him 11,000 points. KNQ is a new ORS in Erie. The following have been cancelled as ORS: YDJ, LJQ, and POW. Your SCM is taking steps to cancel any official appointee who fails to meet the requirements. A simple report each month will keep those appointments going. LAJ has been appointed as EC for Lawrence County. The Horseshoe Radio Club of Altoona is having its election of officers. Thanks, WPA, for your club paper. The ATA of Pittsburgh sends in its usual club paper, the *ATA News*. OMA, Western Pennsylvania SEC, says the new headquarters station of the Allegheny County Emergency Communications Corps is now set up at the Red Cross Headquarters at Smithfield St., and is operating temporarily under the call LMM, fixed portable. AAX does a wonderful job with that club paper. The Steel City Amateur Radio Club boasts of a real club paper. RIK and DNO were laid up recently with the flu. MPO still is traveling the lecture circuit. AEV is becoming popular on 3.8 Mc. NRQ's new 810 final has been proved by NKM and DNO. RXT still keeps the 144-Mc. boys hopping working some nice little contacts. Incidentally, KWH has one of the strongest 144-Mc. signals up towards Sharon. LNA still is working vigorously as Net Control on the Penna.-Ohio ten o'clock 2-meter net. An average of 10 to 15 stations make their evening reports into this net. LNA reported 22 contacts and KWL 10. Traffic: (April) W3NRE 645, NUG 117, KUN 50, UHN 39, KWL 19, MIZ 14, QCN 11, LEV 4, LOD 2. (March) W3LSS 116, KUN 14, AER 12.

CENTRAL DIVISION

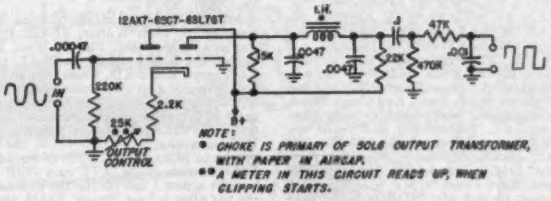
ILLINOIS — SCM, Lloyd E. Hopkins, W9EVJ — PK reports he is back on 50 and 144 Mc. DX on 50 Mc. included W2, 3, 4, 8, and VE3. CRD built the electronic key shown in February *QST* with success. LMC, AMH,

(*Continued on page 65*)



SPEECH clipping is nothing very new. Wartime research at the Harvard Psycho-acoustic Lab. corralled most of the facts, which seem to apply to both radio communication through noise and the design of hearing aids.

Many hams have always had clipping — as, for instance, that speech amplifier that always "got out" so well, that had so much "pick-up." What fewer hams have is the knowledge to design such a system "on purpose." The clipping mechanism can be grid current in a push-pull transformer-coupled "class AB" modulator, or a selenium or copper oxide instrument rectifier, or a pair of diodes, or the circuit shown below. All will work well provided (1) there is no "recovery" effect after a heavy overload, (2) the low frequency response in stages preceding the clipper is very poor (as clipping makes a voice sound more bassy) and (3) that the low frequency response in stages following the clipper is very good.



The easy way to satisfy (1) is to use the circuit shown, or most other published clipper circuits. In overdriven "class A" stages transformer-coupling is likely to be suitable, while resistance coupled inputs keep a charge after a slug of grid current has been drawn. To satisfy (2) use at least one coupling circuit having an RC product of under 0.0003 seconds. The circuit shown has something suitable. Condition (3) is not so important by ear, but a little investigation with a cathode-ray 'scope will show why it is worth while. The square tops of the clipped waves begin to sag in the later stages, and with very poor l.f. response the square waves turn into sawteeth. Thus the level must be turned down to keep the tips of the sawteeth below 100%, and a small reduction in useful sideband power results. However, the loss here is on the order of 6 db, while the advantage from clipping will be on the order of 10 to 20 decibels. Thus it still will pay to use the clipper.

For work on 50 mc and below, a clipper should be followed by a suitable low-pass filter. A single π section filter with nominal cutoff at 3500 cps will reduce adjacent-channel splatter beyond the objectionable point; neither a large nor an expensive unit is needed. The circuit shown will do fine into any single class-A grid.

HENRY CROSS — W1OOP

and VUH recently put on a demonstration for local civil defense leaders. KRH is a new ORS and has 80-meter rig perking. YIX needs a condenser stretcher to reach MARS frequency. QN has been appointed alternate A9USA. LRA purchased a new car and is installing 10-meter gear in it. NIU finally found enough time to return to the air for a couple of contacts. SKR is experimenting with 7-Mc. indoor antenna. KJ spent most of the month on MARS. SXL reports CIN Net doing fine with eleven stations on Sundays at 0830 CDST on 1815 kc. IAY snagged 1¼-kw. gas generator for emergency power. LNI reports progress of TVI-proofing the rig. The Quad City Radio Club's secretary has received his ticket and now is known as MTI. MUD traded his receiver for an HRO-7. EVJ attended meetings of the Rock River Radio Club and the Starved Rock Radio Club where the featured speaker was Mr. Handy, 1BDI. Ed also made many other stops during his sojourn in our section. We regret to announce the deaths of CMU and QYO this month. FGZ is active in MARS and signing AF7FAE. QJW, formerly in Wisconsin, now is located in Springfield. BA is newly-appointed EC for St. Clair County. JMG plans to return to ILN when new rig is completed. Tri-Town Club news: TMD, chairman of civil defense committee, is assisted by TAL on training, IBC on policy, and DTX as net manager. 3GZH is another newcomer to Springfield and an excellent traffic man. QGZ has been on 435 Mc. with ham TV since March 6th and would appreciate reports from viewers. A glance through the Lake County Amateur Radio Club bulletin shows plenty of activity lined up for the next couple of months after a couple of good movies and a field day this past month. TZQ has a 522 ready for action this summer. More amateurs in Cook County are needed to help man the proposed civil defense set-up so here are the ECs for Cook County: DW, QN, EBZ, BWN, BUK, BCW, JIE, SXJ, and LLX. Assistant Section Emergency Coördinator for Cook County is HPG. If you live in this Area and are wondering about the program, please contact one of these men for information and find out what area you are to be associated with. We must not fail this responsibility. Traffic: (April) W9ILH 1327, K9FAE 705, W9YIX 310, KRH 191, QN 191, PK 178, KQL 150, KJ 85, MEM 75, SXL 73, BUK 64, LIN 60, YTV 57, LRA 42, IAY 19, LAX 15, EVJ 12, HKA 12, FRP 9, LMC 8, CRD 4. (March) W9IAY 9, BGN 2.

INDIANA — SCM, W. E. Monigan, W9RE — SEC PHV. PAM v.h.f.: DOK. RM N: RCB. RMs S: DGA, AB. Net station of the Michiana Amateur Radio Club opened for business April 2nd at the South Bend Red Cross Headquarters. The station is open for traffic each evening from 6:15 P.M. to 10:15 P.M. LST. Transmitter is BC-610; receiver is BC-348. DHJ is a member of the 144-Mc. net between Crown Point, Hammond, Gary, East Chicago, Hobart, and Valparaiso. DLI is heard on 3.5 and 144 Mc. KQV is moving to the West Coast. CNY operates on 7 Mc. HDB has a kilowatt on 3.8 Mc. BDP says daylight time and his farm slow down radio during the planting season. New operators at Evansville are MZE and NAT. 4OZQ has new call, 9MKZ. FJI has low-power rig on 3.5-Mc. c.w. TARS is using the transmitting room at the Naval Reserve Armory in Evansville and is planning for Novice classes. UCT is looking for 420-Mc. contacts. The Fort Wayne Mobile Group furnished communications during the crash of an air liner near Fort Wayne and also provided lights and emergency equipment for rescue work. UKT gave a talk to the Kokomo Radio Club on emergency work. See you at the IRCC picnic at Mounds State Park in July and at the Central Division Convention at French Lick Hotel in October. Let's have the reports, fellows. Traffic: W9JUJ 1129, JTX 789, TT 426, QLW 310, DGA 274, LZI 186, NZZ 158, RCB 150, NXU 125, AB 81, TG 57, BKJ 56, JBQ 45, DOK 36, DHJ 34, RE 15, BDP 13, NH 7, YB 6, BSZ 3.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: UFX. PAM: ESJ. RMs: CBE, CWZ, and LFK. New appointments: MYG, Sheboygan EC; GJY, Neenah EC; KUZ, Madison EC. Appointments renewed: MUM as EC and ORS, JEK as EC, FXA as ORS, and WJH as OO. KZZ has been QRL with c.d. and local 144-Mc. net. PFK has just completed a 100-c.p.s. multivibrator for improved frequency-measuring accuracy. FXA and JKZ operated portable at Wausau Hamfest, providing contact for the 50 mobiles in attendance. The BEN was well represented with 44 and the WIN with 21 members present. F. E. Handy, 1BDI, of ARRL Headquarters, was guest speaker. SGG, Blackhawk Club's EC, is issuing an FB bulletin. LIK is enjoying new HRO-50. CSU built a new TV set and a super booster! Managers of both the 'phone and c.w. nets request that all members zero beat the NCS for improved operation. RUF reports that Milwaukee County has completed operational plan with Asst. ECs for each band and outlying communities. ONY was appointed temporary chairman to complete the organization of a Council of Wisconsin Radio Clubs. 1DJV, ex-9DJV, is planning on some 50-Mc. work this summer. MRAC, utilising mobiles and fixed stations, did a fine job of handling communications for the Gen. MacArthur celebration in Milwaukee. Participating were SNK, IZO, GPI, WK, ZYX, VQD, NEM, IZH, VLK, THH, UIT, EKU, MNI, MOT, EBJ, AMB, DR, HWO. GIL, and FDX. FAN has a new 6J6 pre-amp. for 144 Mc. LJV worked quite a few of the stations between Chicago and Milwaukee from 144-Mc. airborne mobile. TQ reports signals down on his daylight 144-Mc. schedules. ERW, KXK, and JGG were active in the CD Party. Traffic: (Apr.) W9ESJ 545, IXA 184, KZZ 169, MQV 149, BVG 144, IQM 122, ADM 103, RQM 68, PFK 54, ANM 42, IQW 40, FXA 39, KBT 31, DR 28, UFX 22, SUF 17, CWZ 16, HDZ 13, MUM 13, ELY 10, OVO 9, NRP 7, GPU 6. (Mar.) W9SUF 136, RKT 10.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Lawrence C. Strandenaes, W9JWY — KRC reports that the 160-meter net comprises almost 30 stations and activity has been very good during the winter and spring. New officers of the Red River Radio Amateurs are VKP, pres.· TDI vice-pres.; and CAQ, secy.-treas. Recent additions to the 28-Mc. mobile rostrum in Fargo are HOX and CAQ. WZQ is sporting a new Ford. LHB, of Park River, is the present RM, finishing out the term of LHS, who left for the West Coast some time ago. WCZ and JPW, both of Bismarck, were instrumental in getting the final details of the call-letter license plate regulations worked out with the Highway Patrol. We use the call-letter plate on the rear of the car and the regular plate on the front. Traffic: W9LHB 30, ZCM 11, EXO 10, NVK 7, CAQ 6, KOY 6, KRC 3, FNZ 2, JWY 2, NBS 2, NPE 2, WWL 2.

SOUTH DAKOTA — Acting SCM, J. W. Sikorski, W9RRN. CSB, Hitchcock, is running 25 watts VFO, and CKU, Aberdeen, is running 100 watts to BC-458 on 7 Mc. COM is the new call of the CQ Club, Aberdeen. GCP has new Lysco pushing the old 813. ZSH sold his rig to CTX before heading for the Navy. Sixty-three hams from this State, Iowa, and Minnesota greatly enjoyed the talk and visit of W1BDI in Sioux Falls. ZFE won the SFARC 7-Mc. WAS Contest, PHR was second, MPQ and RRN tied for third. ZRA has sold his rig to KL7PL, and is back in Sioux Falls after several years with the CAA in Alaska. The South Dakota Hamfest will be held in Sioux Falls in October. ZFE is hamfest chairman. Traffic: W9PHR 44, GCP 12, CQI 7, RRN 2.

MINNESOTA — SCM, Charles M. Bove, W9MXC — Asst. SCM, Jean Walter, 9KYE. SEC: BOL. RM: Gary Taylor. PAM: ORJ. The St. Paul Radio Club, Inc., has elected the following officers: HKF, pres.; PDN, vice-pres.; ALI, secy.; and SXD, treas. The Minneapolis Radio Club, Inc., is moving its club transmitters to a new location at the Sheriff's transmitter site in Hennepin County. The 10-meter gang in Minneapolis has organized a 10-meter net covering the Twin Cities. JPH is the organizer and is Net Control. ISB has a new NC-101X. DZM has moved his QTH from Anoka to Minneapolis. FFS, of So. St. Paul, now is at Fort Leavenworth, Kans. ATC and DOB are now mobile. BOL bought a new Chevvie for his mobile rig. YUN is back on the air after a long illness. AMM and DAB are new OBS. The Runestone Radio Club held its first meeting this spring at IGZ's home at Kensington. DAB joined the CAP gang. EYW has moved to Motley, Minn. QHT is in the Air Forces. LLW has moved to Minneapolis and still is experimenting with s.s.b. New hams are, CQA in Virginia, ZOD in Floodwood, BRT and BMO in Grand Marais, IZC and VGT in Finland, JVX in Hibbing, CBI and APC in Two Harbors, CID in Eveleth, CZS in St. Paul, CYR in Brandon, and OLR in Detroit Lakes. HQW has been suffering ill health. JDJ is back on the air. KNR, QRT for ten years, now is on 14 Mc. with a pair of 807s. CNH is in the Army. HRY is RXL's new neighbor. JCL has a new 144-Mc. rig and a Millen 90800 on the air. QXI has a new QTH and is looking over spare telephone poles. EJP is chairman for the Arrowhead Radio Club's field day and picnic. CZO has moved to W7-Land. KYE is planning on going on 3.8 Mc. BAT and UMK have been giving c.w. a work-out. Join the Emergency Corps now. For blanks drop a card to your SEC, BOL, 1130 Delaware, St. Paul. Traffic: W9ITQ 335, KFF 163, HEO 111, EPJ 55, MXC 44, AAS 39, TKX 34, RA 32, GUS 31, RXL 30, UCV 30, BGY 25, OPA 22, DAB 17, EYW 12, BRA 3, VKR 3, EUR 2, BBN 1.

DELTA DIVISION

ARKANSAS — SCM, Dr. John L. Stockton, W5DRW — The Little Rock Club is to be congratulated on a fine meeting of the Catfish Club. The next meeting will be held July 22nd at Pine Bluff. The Camden Radio Club now is an ARRL affiliated club and has been holding picnics on a local level. RWJ'S first jr. operator arrived April 6th — a boy. UEL says he will be a c.w. man before long! LUX has so many irons in the fire it interferes with his hamming. ONL has been working some 7-Mc. c.w. mobile and says he will be mobile on 3.8 Mc. before long. OCX is building a new exciter for his rig. MET has to stop at 117 countries confirmed and return to sea to visit a little of the DX he has been working. Anyone not getting in on the license plate deal the last time should contact the Little Rock Radio Club for information on securing plates. EEJ is president. EA reports the MARS nets have a good start. Since Arkansas c.w. nets will be closed during the summer, the SCM of Oklahoma has extended an invitation to anyone who wants to work traffic to QNI the OLZ Net on 3682 kc. dur-

(Continued on page 64)

ing summer. Traffic: W5ONL 32, LUX 28, EA 15, OCX 10, FPD 7, RWJ 7, PYU 4.

MISSISSIPPI — SCM, Norman B. Feehan, W5JHS — PGF, SMD, and JHS have been made honorary members of the Keesler Radio Club. PGF's new QTH is Maxwell AFB, Montgomery, Ala. On April 9th SCE checked in the Ten-Meter Net, aeronautical mobile. He was 11,000 feet over New Orleans, La., 70 miles from the base in a C-47, and had an S9 signal with 20 watts. SNR, who works 7 Mc., will be remembered by the old-timers as 4CUG at Montgomery, Ala. We have a YL in Mississippi who can send code. Her call is ROB and the OM's call is ROC. Upon further investigation I find we have another YL, QLK. QMQ is back on the air at his new QTH, Keesler AFB. DNV was seriously injured in a motorcycle accident. PVQ and FCH now are in their new QTH. LEB is active in the Naval Reserve Net. QRN has closed the Rebel Net for the summer. OGN's new QTH is Turner AFB. The Meridian Club has purchased a 3-kv. gasoline-driven generator. DNS has returned from CAA School in Oklahoma City. Traffic: W5PGF 214, QMQ 55, JHS 49, WZ 49, MGR 7.

TENNESSEE — SCM, D. G. Stewart, W4AFI — The Kingsport Amateur Radio Club sponsored a booth at the local Hobby Show with an eye toward educating the public as to the amateur's place in emergency service and civil defense. Messages were accepted to servicemen and dispersed on 4 and 28 Mc. under the calls OLM and PHQ. New appointments: AY, FI, and IWV as ECs; FI and FWH as OES. LUH, Alt. NCS for TPN, is by now well settled in W8-Land. 7KFV/4, former Wyoming SCM, is active at Camp Campbell on 4 Mc. CVM is delving into the mysteries of s.s.s.c. with p.p. 811 final and reports many successful contacts with the West Coast on 4 Mc. with 15 watts peak power. NXT is back in Tennessee after a sojourn in Texas. OOA graduated from high school in May and is mobiling on 3.8 Mc.; he also has lined up some excellent traffic outlets. RPT meets TXN regularly. PL was visited by 6UBZ, whom he has scheduled in various parts of the world. OCG made a nice score in the recent CD Party. APC is moving to a new QTH in Paris. AEE had his difficulties with harmonics but squelched them. AFI and FX were visited by RMJ on his trip to Eastern Tennessee. FLW made a mobile trip to Nashville and vicinity. HHQ is on 14 Mc. for schedules with K5FAC. RZH has new SX-71 and is building 50-Mc. gear. BAQ recently returned from an extended vacation. Traffic: (Apr.) W4PL 2498, OGG 192, APC 135, IIB 48, CXY 45, FX 43, AFI 39, AEE 24, JNI 10, PFP 10, OOA 8, FHP 7, FLW 5, NDC 5, HHQ 4, NPS 2. (Mar.) W4OOA 10, RZH 2.

GREAT LAKES DIVISION

KENTUCKY — SCM, I. W. Lyle, jr., W4KKG — MFI had his OO certificate renewed. KZF is newly-appointed OBS and OPS. HAV is back in town and in the saddle again. DTI is a good outlet for Southern Kentucky traffic. BXU handles Camp Campbell traffic. OXT works both KYN and TLJ-9RN. KKG was elected to membership in the Swedish Sending Amateurs. RQV says a ham club is being planned at Fort Campbell. SKE, a new ham, already is handling traffic and doing an FB job. BNW will be off the air for sometime because of neuritis in his hand. SMU is a new ham in Erlanger, says KZF. VP now is making test runs with a new kw. rig, a pair of 250THs. K4WBG runs a kw. at Fort Knox. ERP is an outstanding 7-Mc. traffic man. NZY is rolling along on KYB and is ragchewing in between. MWX keeps Western Kentucky on the map along with OGB. KQI, with 7 watts, worked coast-to-coast during LO-Nite! FR is "dressing up" his shack. MQ has heavy Naval Reserve duties along with his job as PAM. MGT still is lining up ECs in Kentucky towns. BAZ is one of six representatives to Louisville Civil Defense Council. CNE is rebuilding for a TVI-proof job. LSE joins the telephone group of amateurs in Louisville. MHV is doing mobile work with a nice rig. KXF has a beautiful shack and rig. Traffic: K4WBG 298, W4ERP 245, MWX 116, RQV 68, OXT 54, CDA 35, KKG 28, BXU 18, SKE 13, KZF 10, DTI 9, NZY 6.

MICHIGAN — SCM, Norman C. MacPhail, W8DLZ — Asst. SCM (c.w.): J. R. Beljan, 8SCW. Asst. SCM ('phone): R. B. Cooper, 8AQA. SEC: GJH. PAMs: JUQ and TTY. RMs: UKV and YKC. New appointments include ORS to YG8, DLZ, and ILP; PAM to JUQ; EC to AGJ, Ingham County, and NZZ, Branch County. Sixty-seven members of the MEN, BR, and QMN Nets took part in the simulated bombing attack on Sault Ste. Marie April 16th and received hearty praise from State c.d. and Army officials for handling all emergency traffic between the disaster area in the Northern Peninsula and Lansing, the State capital. Many of the gang were on from 0530 until 1400. MHH/8 and DCF/8 were the key stations and a busy time was had by all. 8ZS reports he is QRT "for the duration," having been called back to active duty as a Navy medic. 2RTZ/8 reports that she is recovering nicely and is working 28 Mc. from a N. Y. C. hospital. How about that! NGW, QSL Manager, reports more than 8,000 unclaimed cards on hand — over 3,000 of which have Michigan addresses! New officers of the Blossomland ARC are BKL, pres.; CRD, vice-pres.; FGB, secy.-treas.; VBW, pub. dir. The Niles gang has elected AIJ, pres.; CPI, secy.; NLO, treas. The Club has its own net and keeps code speed slow for those who like 'phone! 3CEO was guest speaker at the Edison Radio Club in Detroit. Fifty-six employees of the Detroit Edison Co. are licensed amateurs! GPF and GOL are two new calls in Flint. There is much talk of QMN moving to 7 Mc. to avoid summer QRN. The Cherryland Radio Club again is activated with SWM, pres.; SRV, vice-pres.; SYQ, secy.; and ZLK, treas. FX is about to ruin his reputation as a c.w. man by going 3.8-Mc. mobile. EGI finally got on 3.8 Mc. 'phone — after 20 years on c.w. He's only had a Class A ticket for 15 years, though. Overseas traffic still is heavy. The Detroit Metropolitan RC is becoming very active on 1807 kc., according to MCV. QIT now is living in Detroit. Traffic: (Apr.) W8RJC 597, ELW 221, ZLK 168, TZD 136, YKC 136, QBO 128, WVL 103, IV 100, WXO 86, DAP 85, SCW 84, ZWM 73, ZEE 63, DLZ 55, TRP 37, AQA 28, ILP 23, DQL 20, HUD 20, TUX 20, DXA 13, UGR 12, EGI 10, FX 10, DED 9, SWF 9, QIX 8, GJH 7, TBP 7, MCV 4, TTY 2. (Mar.) W2RTZ/8 12.

OHIO — SCM, Leslie Misch, W8HGW — Asst. SCMs, C. D. Hall, 8PUN, and J. E. Siringer, 8AJW. SEC: UPB. RMs: DAE and PMJ. PAMs: PUN and AJW. K8AIR, with its 3 BC-610s and 32V-2, is holding up the section's traffic count in fine style. Belated congratulations to OYI and AJW upon winning the c.w. and 'phone sections, respectively, in the 8S Contest, both not only scoring highest in Ohio but leading the call area also. FNX has new 75-meter rig and is building one for 160 meters. JFC is busy knocking off the Asiatic DX on 14 Mc. KZ5WJ was a visitor at ICC's. LBH has received his MARS appointment. ZJM is working on his second hundred countries. DGG will operate portable W4 at Maxwell AFB until Aug. 15th. DAE hopes to keep BN going six nights a week during the summer months. LYD, who has charge of amateur radio communications in the 5th Defense Area, has just been appointed EC for Cuyahoga County. AJH and EMZ were local winners in the last Cuyahoga County Groundwave Contest while out-of-county high scorers were DJZ and BFQ. The Dog House Net had its annual picnic at Serpent Mound State Park on May 6th. CBI's 75-meter antenna is down. SFI is on with a new 120-watt rig. YJE is up to 93 countries confirmed. WRL has joined the gang on 144 Mc. with a 522. DGG recently received his majority. JRG had his appendix removed. New OCARC officers are IB, chairman; BFH, vice-chairman; EQN, secy.; AUN, treas. The *Q5* of the Springfield Amateur Radio Club informs us that KKQ, VKV, and CAS have been recalled to active military duty and that GLT is a new amateur in the area. The OCARC is going to award an annual trophy to the member club attaining the highest Field Day score. From the *RF Carrier* of the Dayton Amateur Radio Assn. we learn that its c.d. gang completed 30 144-Mc. r.f. units which leaves 20 more to be put into operating shape; GND is the newest amateur in the area; and the ZQU's have a new jr. operator. FG7XA, operating on Guadeloupe, was awarded West Park Radiops' Worked Ten certificate. Traffic: (Apr.) W8DAE 326, IB 260, YCP 201, D8X 165, ARO 140, CBI 87, EZC 85, UPB 62, DZX 49, SFI 36, DXO 32, WE 29, PMJ 21, GZ 19, AJW 18, BEW 14, WAB 13, AL 8, PUN 6, EIV 4, LBH 4, LCY 4, JFC 3, AQ 2, DMJ 2, FNX 2. (Mar.) K8AIR 276, W8SG 147. (Feb.) K8AIR 260, W8SG 244.

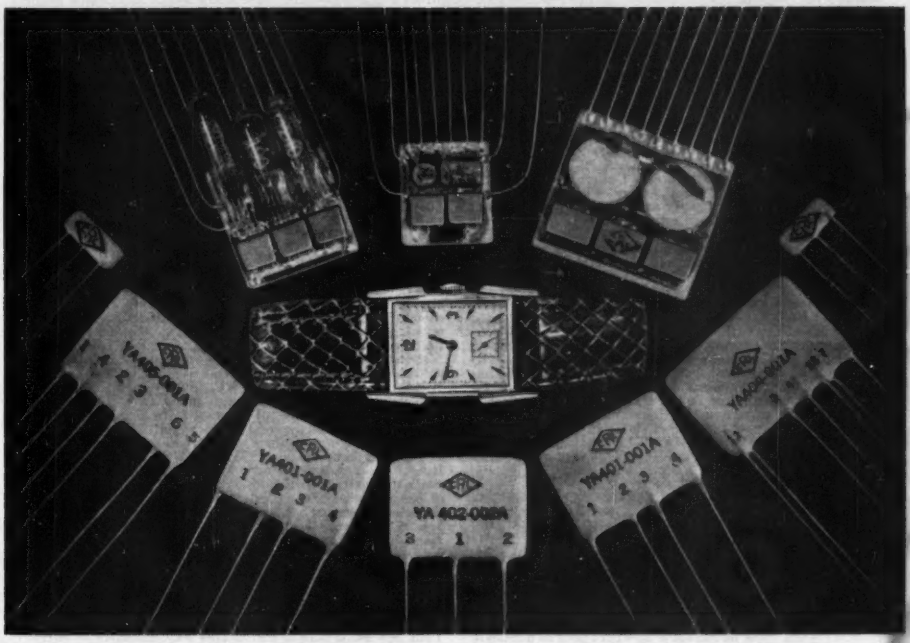
HUDSON DIVISION

EASTERN NEW YORK — SCM, George W. Sleeper, W2CLL — SEC: NJF. Welcome to DXN, who recently joined NYS8 and the traffickers. SNN also sends in first QTC report. WBH reports AREC activity. JQI is busy doing the AARA yearbook after being removed from the sick list. AWF was absent from the air because of domestic activities. SOX held a pre-Board Meeting in N. Y. C. BGO, the recently-appointed Regional Coördinator, really is making things hum with the c.d.-AREC. NJF has a new telephone number and we are wondering the reason. LRW and FEN are active with MARS. KBT is new manager of NYS8. 8GSJ/2 now has been assigned 2GSJ. LRW, EQD, NHY, and CJP need their ORS certificates endorsed. Send them in before it's too late. NYSCD c.w. net has moved to 3509.5 kc. NYSCD 'phone net still is going strong on 3995 kc. GSJ got 40,950 points in the April CD Party with 179 QSOs. APF is moving his big establishment to new and finer quarters. NIV is developing a new method for controlling round tables. GTI gets all over U. S. A. via the air, but not radio. VDQ is at Camp Lejeune, N. C. RYT is Ye Editor of *SARA News*. GYV, KLM, RYT, UKA, and ZHI are on six-meter net at 2 P.M. Sundays. ILI, our very active Asst. SEC, visited SARA. CEV still is trying to find the shack for 2SZ. The spring weather already has influenced the news — there is a big lack of it. Your SCM needs news, especially from affiliated clubs. Endorsement: LRW as OPS. WBH has been appointed OPS. Traffic: W2GSJ 256, TYC 174, LRW 103, KBT 50, CEV 39, BRS 31, PHO 25, DXN 20, GTC 20, SNN 16, WBH 12, CLL 6.

NEW YORK CITY AND LONG ISLAND — SCM, George V. Cooke, W2OBU — The first reported combined simulated test by AREC/c.d. units was held in Nassau County, with all heads of c.d. present and observing. Thirty-six fixed stations with 6 mobiles on 144 Mc. and 7 fixed

(*Continued on page 66*)

Build the smallest rig in your club for mobile or civil defense work . . . with Centralab Printed Electronic Circuits



Centralab's Complete Printed Electronic Circuits Save space, weight and number of components needed

Printed electronic circuits are partial or complete electronic circuits, including all necessary components, printed on and fired to small ceramic wafers and brought out to convenient mechanical leads.

These and other printed circuit plates are now stock items.

AMPEC — Two or three stage audio amplifiers . . . includes all components. Tubes and control extra. Amazing, trouble-free performance.

FILPEC — Balanced diode filter. Comprises 2 capacitors and one resistor on plate only 17/32" x 9/32" x 7/64" thick. Two convenient leads.

COUPLATES — Normally used in audio circuits. Consist of various combinations of three capacitors and two or three resistors. Big saving in space, weight and number of solder connections.

You'll find Centralab Printed Electronic Circuits the smallest, most interesting components you've ever worked with. They literally take the third dimension out of circuitry and reduce necessary soldering to a minimum. Their outstanding performance and durability have been proven by their phenomenal growth in use by manufacturers of hearing aids as well as AM, FM and TV. Write Centralab direct for detailed information or see your jobber.

Centralab

Centralab Division of Globe-Union Inc.
912 E. Keefe Ave., Milwaukee 1, Wis.

stations with 5 mobiles on 29 Mc. made up the teams. FI, Nassau EC, was Control at Mineola c.d. headquarters, with LXL Net Control for 28 Mc. and KTF/2 NCS for 144 Mc. Nassau's 144-Mc. net has 35 to 40 stations active every drill night. DHB/2 is the call of Franklin Square c.d. headquarters, installed and maintained by JRL and ADT. CJY, QHI, and TUK wrote up a bulletin containing c.d. plans and instructional data for the County's AREC and c.d. use. AREC/c.d. hams in the Hempstead Area got the use of a gas-generator and truck for Field Day from c.d. officials. UYX and AAB were called into active service with the Air Force Reserve. RPZ now is stationed at Guantanamo Bay. GCE uses Collins 32V-2 and is mobile on 144 Mc. from station wagon. GBF is the call of the Malverne Club. Kings County, with BIV as EC, demonstrated AREC/c.d. work for the Red Cross, with disaster relief chairman observing at Net Control, and handled relay traffic from Norwalk to Philadelphia on inter-net frequencies. ZLK calls into NYS c.d. net and into TCPN. QGK and EXE are new Asst. ECs. PRE, Manhattan EC, placed 3 stations in police precincts and 2 stations in hospitals and is building up 28- and 144-Mc. nets rapidly. DUF is newly-appointed EC for the Bronx. In Queens County, SYW replaces BGO as SEC. BGO assumes duties as Regional Coördinator, New York State C. D. JSV, new Queens County EC, reports county control has been established at Borough Hall, Kew Gardens, on 144 Mc., with 28-Mc. control in formation. AJF, Acting County EC for Suffolk, advises of activity around Brightwaters as drills are designed to improve operating procedures. LCU built mobile on 28 Mc. and joined KDB's group. Congratulations to the Sunrise Club on its 20th anniversary. TUK, RM for the NLI Traffic Net, states plans are under way for limited activity during the summer with a change in frequency to comply with Armed Forces uses of 3700 to 3900 kc. during maneuvers. EC, manager of TLAP, curtailed net operations until Oct. 1. PF maintains liaison between MARS and Brooklyn AREC/c.d. The Ridge Radio Club attained its affiliation with the League. The Babylon Radio Club has been formed with KNA, pres.; LUO, vice-pres.; JSM, secy.; and VGQ, treas. CLG and YAU have been appointed by the Mid-Island Club as delegates to the FLIRC. Our sincere wishes for a speedy recovery after a serious operation go to RTZ. ZZA, formerly ØMPW, now is settled in Levittown. A solid member of the Levittown Radio Club, he has received his ORS appointment and a net certificate for excellent traffic-handling in the NLI Net. VNJ received a Public Service certificate for handling emergency traffic with VE1BK during the Canadian flood. JZX and TUK presented two TV shows on WPIX, demonstrating portable emergency gear. OJX earned his ORS appointment by joining the NLI Net. GP, PRE, VNJ, and ZZA handle liaison between the NLI Net and the 2nd Regional Net of the NTS. Traffic: W2VNJ 428, PRE 342, BO 332, EC 139, OBU 108, MQB 74, OUT 70, TUK 63, GP 58, BVL 34, UGZ 34, RUZ 22, CSO 18, RTZ/2 17, JBQ 14, IN 13, DIC 10, BNX 10, PF 10, IAG 8.

NORTHERN NEW JERSEY — SCM, Thomas J. Ryan, jr., W2NKD — For the past few months the New Jersey Civil Defense Net has been operating every Sunday morning at 1000 EDST on 3900 kc. Much credit is due AOW for his work as Net Control Station. This Net is another example of the tremendous job done by our very capable SEC, VQR. Now he has come up with a plan to duplicate the 'phone net with a c.w. net operating on 3504 kc. Each of the thirteen civil defense areas will be represented in the net by a station in direct contact with the area headquarters. The Net will operate every Monday at 2000 EDST on 3504 kc. The formation of this net completes the coverage of the State, both with 'phone communication (for verbal orders and intercommunication between civil defense officials) and the c.w. net to be used as the quick means of clearing orders and directives in official message form. If you are not in touch with the Emergency Coördinator in your locality, please drop a line to NKD (address on page 6) and he will arrange for you to meet the EC. We need the help of EVERYONE to do a real job. NQA represented the Raritan Valley RC at the Hudson Division meeting on May 7th. GPV built a 144-Mc. transmitter for the Milltown c.d. installation. BAI conducts Middlesex County AREC drills every Friday from the c.d. communications center at Rutgers Stadium. PAH and QDE are Asst. ECs of Matawan. With the EC, DCP, they are working on equipment for the local police headquarters. SOG moved to Chicago. MLF moved to Minneapolis. EGM is very active in MARS. How many of you made perfect copies of the message broadcast on Armed Forces Day? Let's hear from you. CZA is our latest proud pop! ZKS, club call of the Bayonne Police Athletic League Amateur Radio Club, has joined MARS. The Club runs a full gallon, either commercial power or emergency, from a PE-99B. The following Club members work 28-Mc. mobile: CBY, DOA, ESB, EYT, FDS, GZN, YN, ZCA, and NUI. The last named is the new EC of Bayonne and is active on 3.8-Mc. mobile using a BC-654. FZY and CQB demonstrated high-fidelity audio to the Garden State ARA. YOR completed a 22-225 Mc. modulated oscillator transceiver. On April 22nd AGO, Bloomfield EC, directed a combined c.d. and AREC mobile drill for the benefit of c.d. and municipal officials. The mobiles were operated by OST, ITD, HZY, SXW, IGX and WZX. They use 29,088 kc. During the drill IGW/2 used his HT-17 at the c.d. headquarters in the Bloomfield school. FAA also was fixed station on the net. The operators at IGW included JTN and LVV. The entire operation was conducted with emergency power. Traffic: W2CCS 295, CUI 223, LMB 109, CGG 104, WCL 90, ANG 77, DRV 20, OXL 19, CJX 9, EWZ 9, OUS 7.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — It is with deep regret that I must report GWV as a Silent Key. Benny was a loyal member of the Iowa 75 and will be greatly missed. SCA made BPL again. BDR is new ORS, made possible by his radio club and the TLCN going together and giving him an ARRL membership. That is real ham spirit in action. We know Russ will make a good ORS. Most of you know that Russ is one of our blind hams. SCA reports a new HQ-129 and a 4–125 final. He's all set for QRN. RFT is home from the merchant marine for a month or two. NYX reports that Blackhawk County has voted $2600 to the Waterloo Club for c.d. communications equipment. These boys have sold their county on their value in an emergency. NFL reports that he waits with patience for his Class A license. BDL is a new member of TLCN. YBV is c.d. director of communications for Floyd County. The result of the election of the Iowa 75-Meter Net was as follows: PP, honorary NCS; VCM, net control, with IYW, YUA, AEH, and GIM as alternates; AZR, YKN, YRR, DJD, AEH, and JAD as directors; and WLY as secretary. GBB, OLY, AEH, BBE, and SVD were reported active on 144 Mc. BTX, WCC, WKB, and AEH are on 50 Mc. Thanks for your confidence and the compliment in re-electing me SCM for the next two years. I appreciate it. Traffic: WØSCA 509, YTA 186, NYX 131, QVA 104, BDR 22, NFL 13.

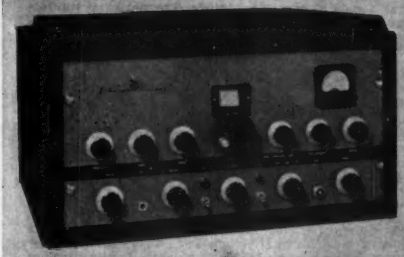
KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH, Asst. SEC for c.d.: UPU. PAM: HEC. RM: WGM. The new radio club in Kansas City, Kans., has been named the Jayhawk Amateur Radio Society. KXL is temporary secretary. The Johnson County Amateur Radio Club, which meets at Hickory Grove School at Mission, has been holding interesting meetings centering on c.d. The Kansas Nebraska Radio Club is planning a hamfest for Sept. 2nd at the Washington County Fair Grounds, Washington, Kans., according to FDJ. CXF, of Ft. Scott, and EIM, of Topeka, have new mobile rigs going on 3.8 Mc. VBQ, of Lawrence, and NCV, of Topeka, have licked their TVI problems. HVL has moved to Clearwater. BLI, of Junction City, has a high percentage of messages originated because of the grey ladies picking them up at the hospital at Ft. Riley. The Johnson County Amateur Radio Club held a simulated emergency demonstration May 5th for the benefit of c.d. officials. Five mobiles and five fixed stations participated, covering Mission, Lenexa, Merriam, Gardner, Leawood, Overland Park, and one outlet in Kansas city, Kans. FDJ has been appointed NCS of the 'phone section of Kansas and Nebraska by 5th Army Headquarters in Chicago. KVRC, of Topeka, is working on Field Day plans. TDW, of Eldorado, reports that GEY will be Asst. EC in Marion County. Traffic: WØFDJ 190, KXL 103, BLI 39, QQQ 34, TDW 26, ICV 17, VBQ 15.

MISSOURI — SCM, Clarence L. Arundale, WØGBJ — Your new SCM will, in his humble way, endeavor to carry on the fine work previously contributed by ICD and HUI. ARH has added country No. 112 on 14 Mc. EBE is building emergency equipment. HUI and EBE secured a very fine emergency power-generating plant. WAP is handling considerable traffic from the H & B Net. UAB now is in Okinawa and Tokyo on radio assignment. NNH is active on MON. QXO reports a fine traffic total and qualifies for BPL and is looking for traffic on 7150 kc. KIK'S activities are curtailed because of TVI. DEQ was host to the S. E. Missouri 160-meter 'phone net picnic which was held at Bolivar. Many prizes were distributed and a good time was had by all. HDK and TAB now are located in California, so will be signing Wē soon. TLY is operating from Air Force Base at Fort Worth and checks into the Show-Me Net. SOM is NC ou M. K. Ten-Meter Emergency Net. BAF qualifies for BPL with a fine traffic total. OUD worked VK on 7 Mc. with 35 watts. MON will continue on 3.5 Mc. during the summer. KXL is publishing a very fine bulletin, *Midwest Clizz*, which covers Midwest Division news. Any amateur contacting five members of the Southwest Missouri Amateur Radio Club (Springfield) will qualify for the Hill-Billy certificate issued by this club. Submit contact data to BHC or BPD. Please report your ham activities promptly. Traffic: WØBAF 726, QXO 639, WAP 141, KIK 44, OUD 44, EBE 41, NNH 30, HUI 6, GBJ 3.

NEBRASKA — SCM, Scott E. Davison, WØOED — It is suggested that all Nebraska hams check in on one of the net frequencies on Sundays to show readiness for any c.d. operating that may come our way. JDJ has p.p. 807s on the air now. KNT and TVS are mobile on 3.5 Mc. CMS is awaiting his ticket and will go mobile. AY banged out another BPL — it's getting to be a habit with Port. The SENRC is busy building up its emergency units. TQD again goes BPL with his overseas traffic lane. GMZ renewed ORS appointment and reports he hopes to go MARS.

(*Continued on page 68*)

THESE ACTIVE AMATEURS WILL TELL YOU...



The JOHNSON VIKING 1 TRANSMITTER
(Available in kit form only)

FEATURE FOR FEATURE
THE VIKING 1 IS TOPS!

VALUE? Yes! Says Mr. Larry Pyle, WØAGE, Chappell, Neb., "... probably the best buy on the market ..."

PERFORMANCE? Yes! Says Mr. Paul Magnusson, W7MYA, Portland, Ore., "... it sure is performing like a charm for me ..."

DEPENDABILITY? Yes! Says Mr. B. R. Fowler, W4RRH, Morgantown, N. C., "... on 160 ... I get Q5 S9 plus reports up in W2, W3, W4, W5, W8 and W9 ... antenna about 7 feet in the air ..."

FLEXIBILITY? Yes! Says Mr. Roy T. Morris, W4PXW, Somerville, Tenn., "... reason I bought a Viking 1 is it has more power and flexibility than any other set .... for same amount of money ..."

EASY ASSEMBLY? Yes! Says Mr. F. J. Flynn, W6DRZ, Palos Verdes, Calif., "... my wife [was] capable of completely assembling the transmitter from ... information contained in the kit. [She] has NO experience in such assembly work ..."

EASILY de-TVI'd? Yes! Says Mr. Rudolph Bartz, W9QHH, Peoria, Ill., "... Congratulations on the Viking 1 ... de-TVI'd with a simple antenna coupler and low pass filter ..."

TOP ENGINEERING? Yes! Says Mr. D. K. Ruth, W3SWX, Pittsburgh, Pa., "... My congratulations for a most excellently engineered job ..."

ALL AROUND SATISFACTION? Yes! Says Wm. I. Neely, W5NEN/4, 1st Lt., Inf., Ft. Jackson, S. C., "... the VIKING 1 ... is everything you say it is ..."

AND

Yes! Says Mr. T. M. Thorson, WØGGR, Bismarck, N. D., "... I get very good reports and results with the rig ..."

Above are excerpts from a few of many unsolicited letters from pleased VIKING 1 owners. These letters are on file at E. F. JOHNSON CO. and are reprinted by permission.

Other Outstanding Features of the VIKING 1

- 115 Watts CW, 100 Watts AM Phone OUTPUT!
- Front Panel Bandswitching. No Plug-in coils!
- Ten Position Xtal Switch for Rapid QSY!
- Provision for Optional VFO Input!
- Pi-section Output Stage. Loads many antennas without external couplers!
- Continuous Tuning Final Tank!
- All Stages Metered!
- Two Complete Power Supplies!
- 160, 80, 40, 20, 15 and 11-10 Meter Operation!

The VIKING 1 is furnished unassembled but complete in every detail including wiring harness, drilled and punched chassis and panel and all parts. Instructions are carefully detailed, profusely illustrated. Novice or old-timer alike can assemble and get brilliant performance from the VIKING 1.

Tubes required — RF tubes: 6AU6, 6AQ5, 4D32. AF tubes: 6AU6, 6AU6, PP807's. Rectifiers: 6AL5, 5Z4, parallel 5R4's.

Prove to yourself, the VIKING 1 is everything you have wanted in a transmitter. Own a "commercial in appearance," "commercial in performance" JOHNSON VIKING 1.

VIKING 1 Transmitter Kit (less tubes, crystals, mike and key), Amateur Net

Only $209.50

JOHNSON *a famous name in Radio*
E. F. JOHNSON CO. WASECA, MINNESOTA

EAO has moved to Indiana. QHG says his 810s are giving him a headache. The Ak-Sar-Ben Club has an FB bulletin called *Ham-Hum*. JKE has a third harmonic now — a boy. A new XYL ham in the State is CSN — the better-half of BBX. APK has moved to Denver. RCH plans to go mobile on new traveling job — Houston to St. Paul. FMW reports the 160-meter net will hold drills only occasionally during the summer months. YSK has confirmed report of 3.8-Mc. mobile contact with 1AW. FQB puts out an FB signal on 3.7 Mc. HSO has a new rig on 3.5 Mc. IAJ's FB rig went sour on him recently. OSB is quite active on 3.9 Mc. with his Viking. AZC QSOed Tex Beneke and his XYL mobile through his city. He has been appointed OO. UVU has been appointed to fill in for RCH as EC. The SCM wants more reports; look for him on 3980, 3745, or 3508 kc. Traffic: W9TQD 1824, AY 687, IAJ 264, JDJ 64, FQB 42, HWM 17, FMW 16, YSK 4.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Walter L. Glover, W1VB — ORP has found it necessary to resign as RM because of the pressure of his TV business. We all appreciate the good job he has done in the past, and hope he will be able to be with the gang on CN regularly. HYF, Ridgefield, has been appointed the new RM. Rog is well known around the section, both for his operating ability and his broad smile, and we feel quite sure he will receive the support of all. BDI has returned from a contacting trip down the Atlantic Seaboard, and through the Midwest as far as the Dakotas. He attended eighteen meetings in twenty travel days. TIB, Ridgefield police station, is on 29,680 kc. Thursdays at 8 and 9 P.M., and is looking for tests with mobiles in Fairfield County. AOS has been trying out his new mobile rig. CTI reports he has 34 members in the local civil defense set-up, and is using 147.15 and 147.24 Mc. in addition to 29.6 Mc. The city has supplied 14 units for 144 Mc. OKX has been issued a new two-letter call, HT. CQF has a new mobile working. GC is active again on 3.5 Mc. as time permits. VB appreciates a note from BJK, an old-timer from way back when, after a silence of many years. Traffic: W1AW 226, NJM 212, AYC 168, LV 156, VB 136, KYQ 87, LVQ 83, HYF 68, BDI 47, QJM 40, CTI 36, ODW 12, GVK 8, KV 7, YU 5.

MAINE — SCM, Orestes R. Brackett, W1PTL — The Sea Gull Net is on vacation but will be back at the end of daylight saving time. The Pine Tree Net is on 3596 kc. at 1900 Mon. through Fri. Your new SCM, PTL, hopes that he can do half as good a job as VV has done in the last two years. Don't forget the annual Down East Hamfest at the Eastland Hotel in Portland, July 28th. RBD is really getting around with that new VFO. RWB has a new job now and maybe that means some new ham gear. AMR is having fun on CAP high frequency. RUZ is more than getting after that c.w., he will get that Class A license yet. ARV has bought a 3-kw. power plant. SWX passed that Class A exam in Boston. Ruby, the XYL of PTL, really is learning the code and will be pounding the key one of these days when she gets that little piece of paper. SCY puts a good signal out on 28 Mc.; he is a member of the Abusive Net which operates in the central part of the State. TKV is designing a certificate for this Net. As I understand it, if you work a certain number of these stations which include ARV, AUR, ED, ITH, TKV, BEU, SSF, SZA, BHR, HUT, RWB, IUV, SCY, JOC, FEE, BAD, RUZ, KPD, NDG, TFG, and PTL you will be eligible for one of Maddy's masterpieces. This is a ten-meter net, by the way, 28.550 Mc. Traffic: W1LKP 179, SWX 73, LBJ 57, QQY 53, VV 45, PTL 35, QIQ 32, BTY 27, NXX 17, GE 16, OLQ 16, QDO 13, QEK 10, AI 8, AMR 8, RBD 5.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — New appointments: HKG, NBT, and SZO as ECs; ROQ as PAM; RQZ as OBS; MEG as OES. THT and TIY are on 28 Mc. Norfolk County Radio Assn. elected NOV, pres.: PCR, vice-pres.; Ray Harris, secy.; AYI, treas. South Shore Amateur Radio Club elected QOI, pres.; MME and SAI, vice-pres.; QBV, secy.; OKK, treas. AYG is active on 3.5 and 3.8 Mc. and worked PY7WS. The Quannapowitt Radio Assn. had a talk by CTW. The Eastern Mass. Club had a talk on TVI by WK and movies by SS. RSE reports that the net will be on 146.8 Mc. DFS, Somerville EC, reports that c.d. work is coming along. HKG has the Malden Net on 28,620 kc. Mondays at 7 P.M. A club is going to be formed with the following members: AHQ, FSN, MWX, KPB, HMK, TKD, HOH, RZE, DOI, PMS, SFK, TFF, HXK, LD, VN, TV, RFE, ROQ, AMO, LEL, NZE, NXG, and LBO. BAQ, Arlington EC, has a net going on 53.4 Mc. with the following hams on: CTW, GEO, KNW, OEX, PIJ, and QXX. NUP is on the Eastern Mass. Net and has a schedule with POK, who gets traffic from Domestic Overseas Net, K4USA, etc. The Braintree Amateur Radio Club has been formed with EKG, pres. and trustee; QVC, vice-pres.; RWY, secy.-treas. Meetings are held the 3rd Thursday of the month at Town Hall. The Wellesley Amateur Radio Society has been formed with the call TKZ. Officers are HRY, pres. and trustee; NWO, vice-pres.; RPM, secy. Meetings are held in the Wellesley Hills Library. DJ and OIR work PS in Lovell, Maine, on 50 Mc. Others on this month were CLS, CK, LJ, CTW, PMS, BAQ, PIJ, KNW, NWL, OEX, OXX, and AWA. AVY has a 32V-1. AVY has these hams on his net in New Bedford: AER, AZY, CTZ, MHN, OQE, SSS, and WU. In Fairhaven APN and ONK are on, and in So. Westport RGG is on. The "KB Net" has been formed on 144 Mc. in tribute to Burt Taylor, KB, which meets on Sunday nights, reports LDD. JSM, Waltham EC, reports that his net is on Mondays at 7 P.M. on 145.96 Mc. EK, Newton EC, has a coax receiver on 144 Mc. The net is on the last Sunday of the month 5–6 P.M. SUR, Mansfield EC, has a 522 on the air. ODQ is on 144 Mc. KQF is on 144, 28, and 3.8 Mc., s.s.b. Sorry to have to report the death of Capt. Henry Wicks, VH. NO has gone to California for his health. The Newton monthly drill had BL, EK, EYI, HLX, JOW, LMU, OMU, PWV, POI, RM, and RWO calling in. The Highland Net is on Sunday nights with FUR, RM, EK, BL, JOW, and LMU on. AGR has a Workshop 28-Mc. beam. The Newton gang had a demonstration of equipment made by Northeastern Radio & Eldico and units made by NSZ, OEJ, and SH. Wellesley has Eldico units and 300-watt generators. LVN is building crystal converter for 144 Mc. JOJ, our QSL Manager, is on 14-Mc. c.w. and 3.8-Mc. 'phone. BGH has new NC-183. AGX is on 14 and 28 Mc. SUV is on 3.5 and 7 Mc. with new antenna. CTR gets on Everett Emergency Net. KGP is on 144 Mc. KTG had a schedule with a ham in Houston, Tex., where her daughter is located. K1FAK is on 14-Mc. 'phone in Boston. Traffic: (Apr.) W1EMG 317, SS 130, JCK 94, TY 85, DMS 76, NUP 32, LM 31, PU 25, JOJ 12, HWE 11, BGH 10, AGX 6, WU 6, AVY 5, CTR 2, ILN 2, SUV 2, ALP 1. (Mar.) W1EMG 393.

WESTERN MASSACHUSETTS — SCM, Victor W. Paounoff, W1EOB — SEC: JYH, RM: BVR, WMN meets Mon., Wed., and Fri. at 7 P.M. EDST. The slow-speed net meets Mon. and Fri. at 6:30 P.M. EDST. It's good to hear COI on again. MUN topped the February FMT with 0.5 p.p.m. accuracy. Worcester Club activity is high but the boys can't seem to get on the air. BDV has a new twist on 3.8-Mc. mobile antenna which he will report on if it works. He will be /1 from York Beach, Me., all summer. BVR now has his own TVI test equipment. Yep, and he gets good pictures with a rhombic on New Haven. MOK and CJK, Willimanset and Holyoke ECs, joined forces for Field Day. RHU is starting work on f.m. station for Tech High School in Springfield. THU is being transferred to Bedford, Mass., by the CAA. He did nice work during his short stay with us. New ECs: JHK, Greenfield, and LIY, Hopedale. RDR's c.d. activities are a feature of Westinghouse weekly bulletin. RDR and JYH were hosts to the Springfield Mayor during c.d. drill. Tape recording was made for future publicity. A demonstration was put on by GZ for the benefit of the Fitchburg c.d. director. The AREC is progressing rapidly with 139 members on the rolls. There are 42 mobiles and 48 emergency radio units on hand with reports still coming in. How about the rest of you fellows? Let's all join up. PED has mobile. MOK, SHX, and PGQ are in the process of building theirs. Please note that the West Mass. Net will continue operation during the summer on a reduced schedule. Drop in often. Traffic: (Apr.) W1EOB 229, BVR 76, THU 71, RHU 27, AGM 14, MOK 14, RZG 14, BDV 4. (Mar.) W1GZ 36, RHU 22.

NEW HAMPSHIRE — SCM, Norman A. Chapman, W1JNC — SEC: KYG, RM: CRW, PVF, at U.N.H., is working 7-Mc. c.w. with 2 watts input to a 6AQ5 and long-wire invisible antenna. TBS has been appointed ORS. He has a newly-converted 522 and is looking for contacts on 50 Mc. 2TG, at Dunbarton, is THM. CRW keeps a traffic schedule with OX3BG in Greenland on 14 Mc. PNR is now Class A and ready to go on 3.8-Mc. 'phone. TAC swapped his C ticket for a new Class B. After a long vacation CPM will be back on the air with v.f.o. and p.p. 807 final. PFU reports his 60-foot mast is back up after losing it in a freak windstorm. The Concord Brasspounders held its annual Ladies Night at the Mountain View House in Warner. A steak dinner and social evening was enjoyed by forty-one in attendance. SAQ, Wadsworth, Ohio, is the proud holder of Worked New Hampshire certificate No. 11. Traffic: (Apr.) W1POK 136, PFU 121, JNC 22, QJX 20, TBS 17, PVF 5. (Mar.) W1CRW 287, TBS 10.

RHODE ISLAND — SCM, Roy B. Fuller, W1CJH — SEC: MIJ. RM: BTV. PAM: BFB. Please note summer schedule for the Rhode Island Net is Mon., Wed., and Fri. at 1900 (EDST) on 3540 kc. The personnel of the Net gathered at the QTH of HLY to plan the summer traffic schedules. Those present were QR, BBN, BTV, HRC, ODJ, HLY, and CJH. The Rhode Island Council of Radio Clubs was formed at a meeting held at the Armory of Mounted Commands. The Council hopes that its existence will cause closer cooperation between the active clubs in Rhode Island. It was voted to have the SCM serve as temporary chairman of the Council. On April 29th, Rhode Island hams participated in a state-wide c.d. drill. As this took place late in the month no report of the number of hams who were active has been received. The License Plate Bill has been vetoed by the Governor. Thanks to NZR, PAZ, and others for their untiring efforts in getting this legislation through both the House and Senate. Traffic: W1BBN 107, BTV 42, CPV 33, OIK 23, HRC 20, KNE 20.

VERMONT — SCM, Burtis W. Dean, W1NLO — PXF died of burns suffered from explosion in his trailer

(Continued on page 70)

world's toughest transformers

CHICAGO

"SEALED-IN-STEEL" New Equipment Transformers

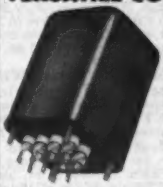
Preferred!

the INSIDE STORY tells why!

The proof of toughness is on the *inside*—the actual proof that demonstrates why CHICAGO Transformers are preferred by engineers, why they fully meet the express requirements of today's tubes and circuits. Here are the "inside facts" of CHICAGO "Sealed-in-Steel" design:

1. Exclusive one-piece drawn-steel case, unsurpassed for strength, moisture-resistance, better electrostatic and magnetic shielding, mounting ease, and streamlined appearance.
2. Uniformly-wound precise coil structures—cooler operation and better electrostatic shielding in power units—minimum leakage, optimum coupling in audio units.
3. Core of high-grade non-aging silicon steel brought to high efficiency by scientific heat-treating in CHICAGO'S own annealing ovens.
4. Core and coil vacuum-impregnated with varnish. Final high-temperature baking achieves a perfectly impregnated coil and core locked against vibration.
5. All internal free space is filled by special, moisture-resistant compound. Prevents corrosion and helps maintain far cooler operation than in conventional air-surrounded mountings.
6. Checked by quality controls at every stage of manufacture, rigidly inspected, "torture-chamber" tested to insure long, dependable life in actual service.

AVAILABLE IN THREE VERSATILE CONSTRUCTIONS



H-Type. Steel base cover deep-seal soldered into case. Terminals hermetically sealed. Ceramic bushings. Stud-mounted unit.

MEETS MIL-T-27 SPECS

S-Type. Steel base cover fitted with phenolic terminal board. Convenient numbered solder lug terminals. Flange-mounted unit.

C-Type. With 10" color-coded stripped and tinned leads brought out through fibre board base cover. Flange-mounted unit.

SEND FOR "NEW EQUIPMENT LINE" CATALOG

Get the full details on CHICAGO'S New Equipment Line—the famous Sealed-in-Steel line that offers advanced engineering design to fit today's circuits. Write for your FREE catalog today—or get a copy from your distributor.

Write for CHICAGO'S "New Equipment" Catalog Today

CHICAGO TRANSFORMER

DIVISION OF ESSEX WIRE CORPORATION

3501 ADDISON STREET • CHICAGO 18, ILLINOIS

CHICAGO TRANSFORMER — TRADE MARK REG.

on May 6th. SET received third-degree burns on his right hand while working on his 32V-2 transmitter. Don't forget, fellows, to "Switch to Safety" while working on the rig. The Tri-County Amateur Radio Club is sponsoring the Annual Vermont Hamfest and ARRL State Convention Sunday, Sept. 16th, in Brattleboro. Officers of the Tri-County Amateur Radio Club are FPS, pres.; AZV, vice-pres.; SDG, secy.; Vito Rizzi, treas.; and RWP, act. mgr. The Club meets the 1st Monday of each month. MKM and SIO have super antennas on 14 Mc. CGX has made over 300 contacts and worked 33 states on 50 Mc. TAN is a new ORS. Traffic: (Apr.) W1OAK 134, KRV 73, RNA 52, PZX 29, IT 25, RNZ 21, AVP 20, TAN 19, JLZ 14, BJP 6. (Mar.) W1AXN 17.

NORTHWESTERN DIVISION

IDAHO — SCM, Alan K. Ross, W7IWU — Blackfoot: LQU is back at Blackfoot working the first trick for the U.P. RR and checking into the Gem Net when time permits. Hayden Lake: FIS and ISF went up for their Class A licenses. Burley: EC HAH reports 5 AREC members, with drills on 29,140 and 29,620 kc. Heyburn: EC FT has 6 AREC members with local drills on 29,626.8 kc. Shelley: ACD and his XYL BKJ visited me and want to remind the gang of the Big Springs Hamfest (20 miles south of west entrance to Yellowstone) Aug. 4–5–6; no admission fee, cabins, camp grounds, 110-a.c. power. Bring gear to swap or sell. Boise: JMH has a new YL addition to the family. GHT passed the bar exam. IWU now works 160-meter mobile in addition to 3.5, 3.8, and 7 Mc. EF is active on 3.8-Mc. mobile. ALY has a Jeep generator for increased charging rate. Traffic: W7EMT 50, GHT 41, MKS 21, FIS 11, IWU 8, FT 6.

MONTANA — SCM, Edward G. Brown, W7KGJ — PX reports the Hell Gate Radio Club has disbanded for the time being. PDE is a new call in Missoula. COH has caught up with his farming and is back on the air frequently. Many prospective hams from Missoula journeyed to Butte to take their examinations. Among those after a Class A ticket was OOY, Mrs. Vern Phillips. NEG is taking the commercial 2nd-class telephone exam. The North Montana Radio Club went all out for Field Day with emergency portable equipment. The Billings gang used their new generators in Field Day activities at Lake Elmo. JZW left Butte April 20th to take a new job in Chicago. MHG has moved to Akron. OIQ has gone into the Navy. Butte hopefuls are getting in c.w. practice on 200-kc. carrier current. EGN and CT are very pleased with their new heterodyne VFOs. The American Radio Relay League official train will arrive in Billings Wednesday, July 25th, at 5:00 A.M. and depart at 11:40 P.M. and will arrive in Helena Thursday, July 26th, at 7:10 A.M. Sightseeing tours are planned for both Montana stops. Traffic: W7KGJ 88, CVQ 30, EOI 14, KGF 14, PX 8, FGB 4, COH 2.

OREGON — SCM, J. E. Roden, W7MQ — The Coos Bay gang, including LXW, IF, EJF, WL, HSY, and AMF put on a most successful OARA Convention. IEJ is manager of new Oregon RACES Net on 3507 kc., which will provide State c.d. headquarters at Salem outlet to all c.d. county headquarters. AIZ is manager of the RACES 'phone channel on 3993 kc. for the same purpose but will use FRT in Salem as the Salem Outlet to be used by State c.d. headquarters. RACES meets every Monday at 8:00 P.M. DST on these two channels. BDN is doing a good job as manager of OEN 'Phone Net, and also as editor of *The Netter*, the OEN official organ, ably assisted by BWD, OZL has been named Asst. EC for Burns Area, aiding NQA, the EC. IRZ is new EC for Medford, while FY is new EC for Tualatin Valley Area. NUR reports some interest in 144 Mc. at Baker. PFI, a new ham in La Grande, is on 7-Mc. c.w. PAB reports that Medford is concentrating on c.d. activities. HLF is concentrating his efforts upon making the State C.D. RACES Net successful. The Oregonion Amateur Radio Society of Portland now is an affiliated club. PFA checks into OEN Net consistently. KR6DN, formerly W7NCZ of Pendleton, is on Okinawa and occasionally contacts his XYL through BIW. AHZ is new president of OARA. PES is newly-licensed in Eugene. MUY is new La Grande outlet for OEN. LT reports increased activity on 144 Mc. in Portland. JNJ is club activities manager for Portland Amateur Radio Club. Traffic: W7AJN 286, ESJ 160, HLF 154, MQ 131, TH 109, OVO 100, KAB 90, BSY 76, KTG 43, NTH 40, NOB 30, GXO 28, BDN 14, HDN 14, GNJ 13, IEJ 7, MBE 4, OZL 2.

WASHINGTON — SCM, Laurence Sebring, W7CZY — SEC: KAA. RM: FIX. The National ARRL Convention will be held in Seattle July 27, 28, and 29. Don't miss it! OPO is new OO in Walla Walla. FRU made BPL again. FIX, the Route Manager, is looking for alternate net control stations for WSN. Average net attendance for April was 12.6 stations, with average traffic per session 11.3 messages. TH is a newcomer to the BPL, although an old-timer in ham radio. NWP checks into WARTS and WSN and landed in sixth place in the traffic parade. Things are tough with radio at ZU; he has the house to paint, the "yacht" to ready, and the yard to work over. 'Tis usually a 'phone man who gets so he can't talk, but this time it was JZR who had the mumps. He has a new shack in the back yard with a lower noise level. KCU is perplexed, confused, and disgusted with band conditions. DRA is gathering parts for a new rig to be TVI proof. KAA is moving out of his present radio room to a new one. FWD and FWR are drawing up the plans for a mobile rig. ETO has switched from fishing for DX to angling for fish. ACF and his powerful one-watter checks into MARS and WSN. LVB and the Skagit Emergency Net are checking out their gear. The Vancouver Amateur Radio Club now is the Clark County Amateur Radio Club. New officers are MVC, pres.; NUG, vice-pres.; IHI, secy.; and USO, treas. KTL checks into WARTS. CWN keeps busy with the garden and a little fishing. KWC is back after the rare ones after working his rig over. The Walla Walla Club house is nearly complete. OQN is a newcomer to the "Hot Stove League." EMP has completed his "Porto-chewer rig." The AREC Net of Eastern King County has NRB, HZ, LFA, JWE, HEE, ODQ, OVU, MJC, BHW, and JPC active with four 10-meter mobiles and three 75-meter mobiles. PED is new EC for Snohomish County. FBX does well with 6AG7-616 rig. BYK, in Tokyo, is able to talk to his wife via 'phone patch. Traffic: (Apr.) W7IOQ 1420, CZY 1159, FRU 507, FIX 238, TH 206, NWP 124, ZU 106, JZR 57, KCU 57, DRA 54, KAA 44, FWD 31, ETO 26, ACF 25, LVB 18, KTL 6, APS 5, CWN 4, KWC 4, OPO 4, JPC 1. (Mar.) W7GAT 10.

PACIFIC DIVISION

HAWAII — SCM, John R. Sanders, KH6RU — OR, BA, and YL have the first three 75-A2 receivers to come into KH-Land. ABQ/AFN handles many 28-Mc. 'phone patches for the Pacific Islands and Maritime Mobiles. OA has routine schedules with several Pacific Islands ordinarily considered difficult DX! AEW/W7, at Yuma, Ariz., is heard on 14-Mc. 'phone. EZ attended a CAP meet in Washington State. YB leaves us on a transfer to Long Island. In investigating utilisation of the new D.C.S. 1.8-Mc. frequencies, RU finds local Loran interference a serious problem. ADY is formulating a net procedure for HARC disaster net. *Far Pacific Area:* KG6FAA complains that poor conditions have cut into his averages, with only 56 'phone patches completed this month! KC8WC now has 100 watts on 14-Mc. 'phone from Koror Island in the Palau Group. KC6AA is on 14-Mc. 'phone from Truk Is. and KC6WD likewise from Ulithi Is. Via radio JA4AG gives his QTH as APO 9, c/o Postmaster, San Francisco. JA4AI, Major Herman R. Smith, jr., Nara Station Hospital, APO 40, c/o Postmaster, San Francisco, also is active. He operates 14-Mc. c.w. with a BC-610A, Super-Pro, SX-43, and doublet antenna. Traffic: (Apr.) KG6FAA 1410, JA3AC 1224, JA4AG 363, JA4AI 220, KH6ADY 13. (Mar.) JA4AI 441. (Feb.) JA4AI 235. (Jan.) JA4AI 143.

NEVADA — SCM, Carroll W. Short, jr., W7BVZ — SEC: JU. ECs: HJ, JLM, JVW, KIO, KOA, MBQ, TJY, VO, and ZT. RM: PST. OPS: JUO. Nevada State frequencies are 3660, 7225, 29,360 kc. JLN bought a ranch near Searchlight. NWU has new Collins 310B-3 transmitter. NRU is building 160-meter portable for Boy Scout summer camp where he is an official. KEV worked his 100th country and says "Now to collect the cards! Hi." OZV is the newest ham in the Sparks Area. He's on 7 Mc. with 250 watts. BYR replaced his Quad with a two-element 14-Mc. beam and is working out FB. EEF is installing microwave gear on top of Mt. Rose. LKX is new prexy of the Reno Club. IRX moved to San Francisco. UGA is on 7 Mc. and is building a modulator for 3.8 Mc. PEV is new in Las Vegas. OBW has new receiver. 3BK8/7 now is 7BK8. OHJ is on 28 Mc. with a new beam and a new QTH. MWF claims his is the noisiest QTH in town.

SANTA CLARA VALLEY — SCM, Roy I. Cousin, W6LZD — Local clubs are working overtime to get in all the activity planned for the summer months. AEV has been appointed SEC for the section. TFZ had to resign as SEC because business commitments were too heavy but he has kept his EC appointment. At the April SCCARA meeting MOV gave a very informative talk on carrier current systems. FTG reports 144-Mc. rigs are under construction and he is very pleased with their progress. He also is moving to a new QTH. CIS attended the Directors' meeting in Hartford. HC is taking over the net manager's job for MTN but will be almost QRL until school is out. YHM really went to town in the c.w. CD Party April 21–22. He totaled better than 100,000 points. CER reports the joint City-County C.D. Planning Council is just being organized and he is waiting for news to see where the hams will fit in. A questionnaire will be sent out shortly in Santa Clara County to all hams for information concerning available equipment that could be used for civil defense. Congratulations go out to our newest ham and a swell gal, LAD. Yep! That's her call. FYA now is mobiling on 3.8 Mc. PDX and ESH helped ZYH put up his new twenty-four-element 144-Mc. beam. He plans to run about 500 watts input. The SCCARA is going ahead with plans for a gala tima at the hamfest planned for July 7th. Traffic: W6BPT 238, HC 75, YHM 67, MMG 2.

EAST BAY — SCM, Horace R. Greer, W6TI — Asst. SCM, Charles P. Henry, 6EJA. SEC: OBJ. ECs: ZZT, EHS, NN8, IT, IDY, LMZ, OJW, WJN. The Napa civil defense and disaster relief plans have gotten under way to

(Continued on page 72)

MALLORY HAM BULLETIN

You Can Be Ready For Emergency Service . . .

with the double-duty dependability of

MALLORY Vibrapack*

Emergency-wise operators have found Mallory Vibrapack vibrator-operated power supplies to be the best all-around emergency power supplies available when disaster strikes. There are several good reasons why experienced operators have found this to be true . . . reasons which clubs and individuals contemplating the construction of emergency communication equipment will want to consider carefully.

Mallory Vibrapack vibrator-operated power supplies, unlike other types of supplies, can be operated as "double-duty" units, supplying both receiver and transmitter without special precautions. Since they are quiet electrically, as well as mechanically, they may be mounted directly adjacent to sensitive equipment with little fear of interaction. They are light and compact to make the whole equipment easily transported when conditions make movement necessary.

Operation of Vibrapack emergency equipment can be had wherever automobiles, trucks, buses, boats, or even airplanes are situated. The 6 volt wet-cell battery commonly found in pleasure cars, or its multiple cell cousin, the 12, 24, or 32 volt battery used in trucks, airplanes, boats, and farm light systems, can be used to operate the 6 volt Vibrapack. When commercial power lines are down and AC service is disrupted, the wet-cell battery becomes the best and easiest obtained source of power for operating emergency equipment. This is a point which cannot be overlooked when planning a really practical emergency equipment layout.

Ease of servicing must be considered, too. Obviously, emergency equipment must be simple, rugged and easily repaired without special tools and parts. Vibrapack power supplies meet this requirement completely, because they are built entirely of electronic parts with which most amateurs are familiar.

Continuous operation ordinarily encountered during emergency communication requires efficient conservation of power available. Vibrapacks operate at high efficiency in comparison to other types of supplies, thus permitting a greater amount of satisfactory communication before batteries must be replaced.

In addition, with 7 models of Mallory Vibrapacks available, supplying voltages from 125 to 400 and power from 15 to 60 watts, a unit may be selected which most nearly answers the power requirement of the emergency transmitter-receiver. With power-wasting voltage dividers and dropping resistors eliminated, the over-all efficiency of the equipment can be improved substantially.

Prior consideration of these points in detail will go a long way toward assuring reliable and really helpful emergency communication when unexpected disaster strikes your community. Your Mallory Distributor will be pleased to give you more information about Mallory Vibrapack vibrator-operated power supplies, or if we can be of service in making a recommendation, communicate with us at Box 1558, Indianapolis 6, Indiana.

*Reg. U.S. Pat. Off.

P. R. MALLORY & CO., Inc.
INDIANAPOLIS 6 INDIANA

P.R. MALLORY & CO. Inc.
MALLORY

a good start under the sponsorship of LXE of the Napa City Engineering Dept. ITH is becoming interested in s.s.b. and 144 Mc. QDE finished his new final and now is chasing the bugs out of it. YDT now handles most of his traffic with Japan. JZ comes through again with an FB traffic total. QXN keeps 'em rolling. NGC has new three-element Workshop beam for 28 Mc. DTW now lives in the Sacramento section but his last report to me was lost so we go on record now with a traffic total of 2409 for December, 1950. JVE is working 3.5 Mc. with a 6F6 and a 6SN7 from his car. KPO's wife now is DTS with a Class A ticket. April 15th found the SARO gang hard at work on a Hidden Transmitter Hunt. The SARO nets are as follows: Mondays, 7:30 P.M., 29.6-Mc. f.m., with CBX as head man; Wednesdays 8:00 P.M., 3791-kc. c.w., with FZC taking over; Sundays at 9:30 A.M., 3870-kc. 'phone, with QWX the man of the hour. BB, the University of California Radio Club, comes to life with a report the members are building a new station, rotary with five antennas, with a transmitter for all bands. Mr. Phillip H. Ellis is the secretary and can be reached at Cory Hall. The Mission Trail Net reports that rumors are like rabbits and rumors multiply, too. The gang will hold a get-together at Coyote June 30th and July 1st. Don't forget the National ARRL Convention in Seattle on July 27, 28, and 29. A gala time has been arranged so get in touch with 7RT for all the information. PB claims all his new finals are TVI-proof. MEK is back on the air in new QTH with high power. GIZ is back once again at Electric Supply Co. ZUI is a busy man these days. MHB has two new poles up and another dozen to go. BUY has TVI trouble licked as much as it ever will be in a fringe area. CTL is working hard to complete his new rig. KEK is keeping his fingers crossed on TVI. WP still is too QRL for radio. IDY is getting interested again after selling his TV business. IKQ hopes to become active again. The East Bay gang turned out in force at the Fresno Hamfest, but many had to be turned away. Traffic: (Apr.) W6JZ 1080, QXN 210, YDJ 81, NGC 37, TI 5, EJA 1. (Dec.) W6DTW 2409.

SAN FRANCISCO — SCM, R. F. Czeikowitz, W6ATO — Phone: JU 7-5561. SEC: NL. Phone: PL 5-6457. *Eureka Area:* EC: SLX. Congratulations to NAO and his XYL on the new YL. KTU has a new three-element close-spaced beam. New calls in Eureka are KXH and LAH. The head of the Red Cross was so impressed by the amateur disaster drill that she is going out for an amateur ticket herself. ZSE reports his new quarter-wave vertical much better than his previous horizontals. FCR is building a 160-meter rig. KAR is Scout Master of Boy Scout Troop 40 of Loleta. We trust he is teaching them the code. The HARC held a "Hubby Show" in May. The Humboldt Radio Amateurs Club meets the second and fourth Friday in the YMCA rooms, rear of Municipal Auditorium, entrance on "E" St., Eureka. *San Francisco Area:* EC: BYS. Phone BA 1-6157. Asst. EC: JWF. Phone MI 7-3284. Major Art Monsees, HJP, now is an MARS Director, and signs AF7FAE from Everett, Wash. ØWVZ has immigrated from Colorado to Willits, Calif., where he is a dispatcher for the N.W.P.R.R. The SFRC is planning a "Beer Bust" for the near future — free to members only. Any San Francisco amateur interested in volunteering to operate the Civil Air Patrol station at the Presidio for two hours one or more nights per week, please contact the SCM, telephone number above and address on page 6, *QST*. Ted Hamby, president of the HAMS, and a member of both San Francisco clubs, has the unique honor of being fought over by both clubs each year for Field Day. Why? — He is the best cook in both outfits. The San Francisco Radio Club meets the fourth Friday at the American Legion Hall, 1641 Taraval St. The High Frequency Amateur and Mobile Society meets the second Friday at the Red Cross Building, 1625 Van Ness Ave. All are welcome to either club. *Marin Area:* EC: KNZ. Bob Longley and J. S. Sharpe are studying for their tickets. KNZ has a new 38-ft. sailboat. Ernest also has finished 90-ft. vertical. TIJ, JZY, OEI, LUM, and MRZ are working 160 meters. K6BU is eliminating local interference. CEW is using differential keying. BCM is working all bands. The Marin Radio Amateurs Club meets the second Friday in the Engineering Lecture Room, Marin College, Kentfield. The Tamalpias Radio Club meets the third Friday at 232 Mirimar Ave., San Rafael. *Santa Rosa Area:* EC: IEN. DTV ably represented the Sonoma County Radio Amateurs at the ARRL Pacific Division Directors' Board Meeting. 144 Mc. is receiving considerable attention in this area. GGE, WOR, and DTV are quite active. HQN is the only station reporting traffic — the traffic totals of any others will be welcomed. The Sonoma County Radio Amateurs Club meets the first Wednesday in the Tap Room of the Grace Bros. Brewery on Second St., west of the Freeway, Santa Rosa. Traffic: W6SWP 233, JCG 28, HQN 20, ATO 8.

SACRAMENTO VALLEY — Acting SCM, Willie van de Kamp, W6CKV — Asst. SCMs: Northern Area, 6YNM; Central Area, 6CKV; Southern Area, 6ZYV. SEC: KME. ECs: Mct. Sacramento, BVK; Walnut Grove, AYZ; Dunsmuir, JDN; Mt. Shasta City, EWG; Paradise (Chico Area), HBM; Roseville, GHP. RM: PIV. OBS: AF, BTY. PAM: ZYV. OES: PIV, GHE. OOs: ZYV, YNM, BTY, GDO, YV. OPS: JDN. Nets: Sac. Emergency (city) AUO NCS. Sac. Valley Net, JEQ NCS. Mother Lode, UNT NCS. Tall Pine, YNM NCS. *Northern Area:* JDN is active on MARS. OJB is mobile on 3.8 Mc. EXP moved to Susanville. *Central Area:* GERC provided radio communication for Chico State Pioneer Day parade. GHE moved to Sacramento. AYU has improved signal with two half-waves in phase on 160 meters. AF is working DX. GERC enjoyed the ARRL TVI movie. *Southern Area:* GDO has 'phone patch. GZY is alternate on RN6. GDE is in the Signal Corps at Camp Gordon, Ga. Traffic: W6PIV 111, JDN 95, GDO 78, KRX 41, JEQ 39, ZYV 18, HNL 16, GZY 2.

SAN JOAQUIN VALLEY — SCM, E. Howard Hale, W6FYM — SEC: FYM. ECs: BCL, CQI, EHN, FIP, GCS, GJO, HZE, and JPU. RM: GJP. ORS: HU, GJP, and LRQ. OBS: GS, EXH, GRA, and OHT. OES: RJE and UWY. OO: FKL. BCL, of Ripon, replaces HIP as EC in San Joaquin County. HIP requested resignation because of pressure of other business. The new Modesto Club is meeting in P.G.&E. club rooms on Tuesday nights. Your SCM is getting swell reports on 144 Mc. because of new p.p. 4-125A final running 600 watts input feeding his twenty-four-element beam. LRQ is conducting 420-Mc. tests with GUZ and ASV, who are about 70 miles north of him. EHN reports he is active on 3.8, 14, 28, and 144 Mc. and is building new sixteen-element beam for 144 Mc. GJP, as RM and Net Manager of SJVN on 3525 kc., has started issuing Section Net certificates to regular check-in stations. EHN reports 26 AREC members in the Bakersfield Area and GCS reports 24 AREC members in Tulare County. If any of the licensed amateurs in this section are not yet signed up in the AREC or if your club has not put together an emergency plan, please contact your EC or SCM/SEC. The Fresno Hamfest was its usual yearly success and much credit goes to Club President Tom Catich, MGN, and his excellent committees. Don Waters, an SWL from Fresno, won both 75-meter hidden transmitter hunts. Don't forget to send me your activity reports. I'll be glad to send you the reporting forms. Traffic: W6GJP 57, LRQ 41, EXH 18, QUE 15, K6AU 12, W6FYM 7, FFK 5, JQB 4, BCL 2, GYH 2, PGP 1.

ROANOKE DIVISION

NORTH CAROLINA — SCM, Herman P. Jolitz, W4DCQ — SEC: ZG. PAM: DLX. RM: AKC. The 4NC gang had another big Field Day at High Rock Lake; the Greensboro gang was on the shores of the same lake at another location. PZE is going mobile with a nice set-up for his car. AKC is doing a fine job with his *NCS News*. A very nice report was received from Cpl. J. A. Divita, USMC, who is 2FYJ, now operating 4RGH at Cherry Point. Joe got his Class B in January and was elected NCS of the North Carolina c.w. net as of May 1st. Operators active in the c.w. net are RGH, BDU, HER, REZ, CLV, PL, and AKC. NZG has been ordered overseas and so Joe is keeping the activity up at RGH. RHB, of Edenton, now is EC for his area. NTQ is on active duty with the Navy. VW has been bitten by the TV bug. FT is back on after a period of inactivity. It is rumored that NXZ is letting courting interfere with his ham radio. NYN got on long enough to work FG7XA, as did DCQ and IFR. RRH sends in a fine traffic report. SMJ is a new ham in Hickory. IAG is the proud papa of an SX-71. REZ also reports activity on traffic nets. Your SCM will be unable to meet the Tar Heel Net in the evenings for the next three months so requests each member to send in his report by mail. Traffic: W4RGH 79, RRH 42, REZ 37, DCQ 1.

SOUTH CAROLINA — SCM, Wade H. Holland, W4AZT — The gang had a good hamfest May 6th at BPD's farm in Orangeburg. More than forty South Carolina hams and a few of the boys from North Carolina were present. The next picnic will be held as Sesqui-Centennial State Park near Columbia in mid-September. The Charleston gang held a very successful civil defense practice drill in late April with all the Charleston mobiles taking part. FFH acted as control station and tied in the entire South Carolina 'phone net. CHD has a new transmitter and actually was heard trying to use a mike, and on 28 Mc. at that. We hear that SBR has moved out to TVI row. EJH, AZT, HWZ, GZO, and NJG are all within two blocks of each other and extend a welcome to SBR. JNL has moved back to Savannah and a traveling job. AZT has his 14-Mc. beam in operation again and will be on 3.8 Mc. less than usual. EDQ has a new transmitter on 14 and 28 Mc. BUF is operating at Myrtle Beach. MCY is on 7 and 28 Mc. now and is handling lots of traffic. QCC/4, in North Augusta, is active on 4RN and the Rebel Net. ANK still is top traffic man for South Carolina. Traffic: W4ANK 373, QCC 205, CHD 125, MCY 107, AZT 42.

VIRGINIA — SCM, H. Edgar Lindauer, W4FF — This report was prepared by KFC, substituting for SCM FF, who is ill. KFT, LAP, and NAD had more than 70 QSOs in the Virginia QSO Party. 9ERU, well-known Illinois ham, now is located in Falls Church. VN, the Virginia (c.w.) Net, and VSN, the slow-speed net, suspended operations for the summer, effective May 4th, but VFN, the Virginia 'Phone Net (3835 kc.) rolls merrily on at 7:30 P.M. Mon. through Fri. Congrats to General EMJ on the acquisition of his second star! KAO works mobile on 3.8

(*Continued on page 74*)

and 28 Mc. WG enjoyed his first 'phone CD Party since 1941. NAD keeps active on 3.8 Mc. with 60 watts and a clamp tube modulator while constructing new rig. QDX has a new HQ-129X. K4AIR has added a new BC-610 to the station equipment. FV lost his modulator power supply in the Virginia QSO Party. PXA is interested in ORS appointment. Qualifying for VFN certificates are IHN, IWS, JQU, JZA, KAO, LVA, MIK, MLD, OKM, OYP, PDL, and SKI. SKI is the station of the newly-formed University of Virginia Radio Club, officers of which are NCN, pres.; NHX, vice-pres.; NKV, treas.; and 10KL/4, trustee. RYD is a new ham at Narrows. NV played host to a substantial number of Virginia hams at the VFN picnic held May 20th at his Palmyra, Va., farm. 9QLW is stationed at Fort Belvoir. JVA has antennas up for 3.5-, 7-, and 14-Mc. operation. We hear that RQR is in CN8-Land. NV is circulating petitions preparatory to requesting legislation providing for call letters on the license plates of Virginia hams. Drop a line to NV at 1117 Cambridge Cres., Norfolk, for petition forms. SEB, ex-3MTQ, graces the ether from his new QTH in Falls Church. Director CVQ and ARRL Secretary 1BUD have reported on VFN for discussions of timely ham topics with the VFN membership. LIM has gotten as far as lighting the filament of his new 4-1000A final! OSS is ensconced in his new country QTH near Burke. FV, CFV, MWH, KSW, and KFC lead the VN gang in the number of nights reporting for the '50-'51 season, while VFN leaders are FV, CVO NBA, OGX, IYI, and JAQ. Traffic: K4AIR 460, W4FV 166, QDX 113, JAQ 67, NAD 61, PWX 60, KFC 47, LAP 34, NV 28, CFV 26, MUP 24, LK 18, KSW 17, IYI 6, WG 6.

WEST VIRGINIA — SCM, Donald B. Morris, W8JM — The Tri-City ARC of Dunbar has subscribed to the Braille Edition of *QST*, to be donated through ARRL. RKV discussed s.s.b. at the last Club meeting and 10 members attended the Beckley Hamfest. PZT qualifies for Class 1 OO by his recent accurate work. The MARA operated 8P at the Fairmont Hobby Show, handling more than 200 messages. AUJ again hits BPL and was an outstanding traffic station the past season. AHX, at Bluefield, is a new amateur in the State, active on 14 and 7 Mc. DFC and DWA are editors of the Princeton Amateur Radio Club's bulletin, *PARA*. GCZ is new ORS working on 3.5-Mc. c.w. with power raised to 125 watts. The PARA's code class now has ten new members. YPR finally snagged 48 cards for WAS, Vermont being the tough one. DYP visited EUZ, OXO, and JM after concluding a successful season on the W. Va. 'phone net, along with MCR, State PAM. A good bet for Wayne County is FYD on 3.8-Mc. 'phone. It looks like an expedition will be necessary to get a station on in Monroe and Wirt Counties. BWD, PZT, UHK, VCA, AUJ, and GIN keep the Stonewall Jackson Club humming. Traffic: W8AUJ 510, BTV 211, DFC 43, BWK 9, GCZ 6, PZT 6, JM 5.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, M. W. Mitchell, WØIQZ — SEC: KHQ. Asst. SEC: PGX. RMs: ZJO and LZY. ZJO made BPL again! TV is new EC in Colorado Springs. He and EYN are getting the civil defense set-up under way. ZJO still is requesting help with NCS on PAN. It is becoming more and more evident that many amateurs in Colorado are living in the past, as far as amateur radio is concerned. There seems to be very little interest in civil defense, but those who do realize the importance are having considerable difficulty in getting others interested in it. It's time you stop dreaming, fellows, and get down to business and realize the importance of civil defense. It is very good insurance. We need an EC in every community in Colorado but at the present time only about 8 per cent of the State is represented by ECs. YOU will be needed badly in case of emergency, but if you are not trained for it when it hits you will be a hindrance, rather than a help. Let's get in there and pitch! NOW IS THE TIME! TOMORROW MAY BE TOO LATE! Traffic: WØZJO 1824, KHQ 36, LZY 26, IA 16, DYS 2, YMP 2.

UTAH — SCM, Leonard F. Zimmerman, W7SP — The only report we received this month was from UTM, who says he would have made BPL if he hadn't had to put in a week of swing shift. The UARC has changed its meeting place to Room 105, M.S. Bldg., U. of U. Campus. Meetings are held the second Wednesday of the month at 8 P.M. QAA has a new jr. operator. OOK finally has moved to her new QTH. It is rumored that BSE is dividing his time between square-dancing and ham radio. OSV is on 144 Mc. JOE has a 75-A2 but says he doesn't know how to run it yet. KUX is rebuilding both the shack and the transmitter. Has anybody seen JPN's new invisible wireless beam? UARC is holding "Operation Field Day" on Little Mountain again this year. NUZ is going to Ft. Sill for the summer but will be back by September. Traffic: W7UTM 476.

WYOMING — SCM, A. D. Gaddis, W7HNI — TJ is building de luxe ham receiver. JDB now is KG6AAE on Guam and wants Wyoming QSOs on 14-Mc. 'phone. LKQ, Acting EC, is getting an FB start in the job. ØZAI/7 is working out FB on 14 Mc. considering the antenna! GOH won't help IJW get the bugs out of his new rig. EVH is rigging up 654 portable with a.c. generator. JGS is glued

(*Continued on page 76*)

"by far the best I have ever used!"

...that's what they say about the

E-V CARDAX

• The clear call of the *Cardax* gets positive voice recognition . . . and more QSO's. It's the first and only high level cardioid crystal microphone with Dual Frequency Response . . . gives you high fidelity for clear channel or rising characteristic for *extra crisp* speech signals that cut through QRM.

CARDAX, Model 950, lists at $42.50

Authorized Distributors Everywhere

*Names on request

The MERCURY
Rugged, handsome Crystal or Dynamic. Extra quality features at minimum cost.

The CENTURY
Low-cost all-purpose crystal and dynamic models. Rugged, dependable. Satin chromium finish.

The "630" DYNAMIC
Very popular super-dynamic. Ideal frequency response. High output. Acoustalloy diaphragm.

TOUCH-TO-TALK
First to fit any mike with 5/8"-27 stand coupler. Finger-tip relay operation or microphone "On-Off." With or without mike.

SEND FOR NEW CATALOG NO. 110

Electro-Voice

MICROPHONES
PHONO PICKUPS
HI-FI SPEAKERS

404 CARROLL STREET, BUCHANAN, MICHIGAN

Export: 13 East 40th Street, New York 16, N.Y. U.S.A., Cables: Arlab

E-V Pat. Pend.
Crystal Mikes
Licensed under
Brush Patents

to his antenna rotor. JRG and HNI had eight contacts on 144 Mc. AEC is busy at his lake cabin. ABO and AMU are oiling their bugs with prune juice. AXG and HX are raising bananas. KUB was elected president of the Shy-Wy Club. Traffic: W7GSQ 12, NOU 4, EVH 2, GS 2, HLA 2, HNI 2.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Lewis C. Garrett, W4LEN — New appointments: ISD as SEC; HFP, DEC, and PUZ as PAMs. OPH and GCZ are on 3.8 Mc. from Mobile. NGL is new treasurer of the Mobile Club. The Mobile Club each year provides the only communication for the Deep Sea Fishing Rodeo. This year they plan to use 50 and 144 Mc. PXO now is on 3.8 Mc. from Birmingham. ALA is back on the air with an HT-9. GXC has new jr. operator. FSW visited FBB at Flat Creek. DID and FSW were on The Voice of America via tape recording by Hank Miller. EBZ is rebuilding with 4–125s. GLR has new kw. on 14 and 28 Mc. DYM made DXCC on both 'phone and c.w. All Birmingham mobiles are getting on the same frequency for c.d. NQK has a new home and 3.8-Mc. antenna. PYU is moving to Waco, Tex. 0ACK now is operating K4FAG in AENP. FVT is back on 3.8 Mc. FGT has new SX-28A. SQM is new call from Decatur. FPB has a nice signal from flea power rig from Warrior River Camp, also 600-watt emergency-power rig. GHZ, SLJ, MVM, and GCZ are on 50 Mc. from Mobile. CYL is de-TVling BC-696. KIX, RM AENB, has an FB net directory and manual out. Traffic: W4MVM 80, KIX 72, K4FAG 30, W4RTM 23, HFP 20, LEN 20, OAO 20, BFM 14, EJZ 13.

EASTERN FLORIDA — SCM, John W. Hollister, jr., W4FWZ — OZC has the Gator Net on 7290 kc. going full swing. The following stations reported in, in April: CKB, KOR, JWX, OCG, DES, IWX, GTM, OMN, MNT, OGI, QG, IE, FWI, IM, SAT, CGH, 5QNB, RYS, 3CUL, 9KCN, 8FOR/4, 8AJB, and VE3IA. Other members are RVU, RYS, PZT, PMN, and JYC. Deland: W8 did a nice QSP direct to KH6PA on 3.8-Mc. 'phone. Also heard calling from Deland were WV and WZ. Fort Laud: IM reports the following TRT/A.T.&T. gang on 28-Mc. mobile 'phone: ABU, AFF, FNR, IEH, RUM, and IM. Jacksonville: JWX, IZ, HWA, GZJ, EOE, and EEW were active in JARS Field Day planning. SOX is a new ham in Jacksonville. At long last, a traffic report from one of the Jacksonville gang, JWX of the Gator Net. Oakland: OCG has moved back to Oakland. Punta Gorda: Flowers to OGI for a good job done with the Palmetto Net this past season. Although handicapped by lack of good coverage in the State, Ed did a splendid job. He still needs Utah for WAS and Asia for WAC on 3.5 Mc. General: I have been informed that amateur weather station reports will be handled this year by the Dade Radio Club station, NVU, and stations are being invited into the net. KWA, at Coral Gables, reports he can handle traffic on 7 Mc. during the middle of the day. He and JIC keep schedules. CKB, at West Palm Beach, says the Rebel Radio Club really is proud to place third in the SS Contest. Bev reports that the Rebel Club is going after members in order to put Florida on the contest map and finish ahead of the powerful Frankfort and Potomac Valley Clubs. Traffic: W4OCG 266, LMT 92, KJ 86, PJU 48, CKB 35, OGI 31, WS 31, JWX 18, FWZ 14, IM 14, KWA 2.

WESTERN FLORIDA — SCM, Edward Collins, W4MS/RE — SAW has a new 75A-2 receiver. PTK has an FB mobile rig in his car. FHQ has an FB 'phone signal on 28 Mc. ODO is building 50-Mc. converter. JPD is fighting modulation. UC has been active on 28 Mc. UW is another old-timer heard from. PAA has his 32V-2 perking. BFD is building 50-Mc. converter. DHP is increasind code speed. NYZ now is Class A. PRV has been ill. PQW has been QRL the Tri-State Hamfest. MS has a Wallman converter under construction for 144 and 50 Mc. VR keeps up his FB work on 7 Mc. RZV has been knocking off the DX. BKQ is heard on 14 Mc. QU put in a welcome appearance. LRC is going back in the Navy. MFY does a wonderful job at frequency measuring. PLE is Eglin Field Area EC. OCL was heard on 28-Mc. short skip. AXP still clings to 7 Mc. and TVI. OCX was home on a short leave. CQF has an FB three-element beam. OKB still is working on the grid dipper. JM is interested in 144 Mc. MUX is going full blast on 7 Mc. NOX is on 14-Mc. c.w. regularly.

GEORGIA — SCM, James P. Born, jr., W4ZD — The amateurs in Carrollton have organized a new club, the Carrollton Amateur Radio Club, and elected the following officers: OLR, pres.; GDW, 1st vice-pres.; RJY, 2nd vice-pres.; and PJ, secy.-treas. Code and technical classes for the Boy Scouts and other members are being held regularly by the Club. It is with deep regret that we must report the passing of CFT and FJB, of Atlanta. OTG has moved to Fort Lauderdale, Fla. RPO has a new 90-ft. tower and a new beam. SLH and SOV are new hams in Atlanta. HZG has a new 28-Mc. wide-spaced beam and a new mast for the beam. KOR is in the hospital. PDR has a new 28-Mc. beam. GMP is in the hospital with a broken ankle. The Atlanta Radio Club, at its April meeting, unanimously voted LXE and ZD lifetime memberships in the Club "in appreciation for their time and effort in presenting and pushing through to a successful conclusion the Georgia Amateur License Tag Bill." The amateurs in Macon have

(Continued on page 78)

Be Sure of Your Installations
Get the *Aptitude-Tested*
RG/U TRANSMISSION LINE CABLES

● You know what you are doing when you use Belden RG/U Transmission Line Cables—they're aptitude rated. They are designed to provide desirable electrical characteristics, and rigid control assures constant quality.

Specify Belden Radio Wires.

Belden Manufacturing Co.
4621 W. Van Buren Street
Chicago 44, Illinois

APTITUDE RATING No. 8236		APTITUDE RATING No. 8237		APTITUDE RATING No. 8238		APTITUDE RATING No. 8239		APTITUDE RATING No. 8241		APTITUDE RATING No. 8240	
Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft
100.	2.65	100.	2.10	100.	1.90	100.	2.90	100.	3.75	100.	4.10
200.	3.85	200.	3.30	200.	2.85	200.	4.20	200.	5.60	200.	6.20
300.	4.80	300.	4.10	300.	3.60	300.	5.50	300.	7.10	300.	8.00
400.	5.60	400.	4.50	400.	4.35	400.	6.70	400.	8.30	400.	9.50

Belden *Radio* **WIRE**

The *Aptitude-Tested* **LINE**

reorganised the Macon Amateur Radio Club and elected the following officers: FFD, pres.; JMW, vice-pres.; PKT, treas.; KPC, secy. Traffic: K4WAR 690, W4FBH 56, ZD 52, LYG 22, MTS 10.

WEST INDIES — SCM, W. Werner, KP4DJ — SEC: ES. BI, CI, ES, FJ, and GN are 3.8-Mc. mobile in Ponce. DV, DL, CU, FF, and EG are 3.8-Mc. mobile in San Juan while JA and CK are installing 3.8-mobiles. KP4ID, at Red Cross Headquarters, will guard 29.1 Mc. as well as 3559 and 3925 kc. during emergencies. DJ was appointed trustee of KP4ID by PRARC directors. The AREC 3925-kc. net handled CAP traffic from San Juan to Ponce for the Air Show there. KV4AA has joined the AREC 3559-kc. net. CH reports into the 3559-kc. net. AZ has 14-Mc. three-element beam at his new shack. HU, IT, and IG transferred to W4-Land. The BARC elected NE, pres.; NC, vice-pres.; NS, secy.-treas. Two new Class A hams at Ramey are KO and LH. New hams at Ramey are OK, OL, OP, OQ, OR, OX, and OY. KV4AO has transferred to KP4. HU, UW, and KD worked JA2KW, ex-KP4MH. KV4AS is trying 14 Mc. FG7XA (CM9AA) worked CC, CP, DJ, DV, FAA, FF, GN, HZ, ES, KB, KD, and NW on 3925-kc. AREC net from Guadeloupe. FG7XA had 2147 contacts with 100 countries using 807 and SX-72. Traffic: KP4DJ 14, DV 7.

CANAL ZONE — SCM, Everett Kimmel, KZ5AW — Attention ex-KZ5s: QSL Manager PC is cleaning files cluttered with old QSLs for ex-KZ5s, and says you can have them if you mail in your current address NOW. The CZARA demonstration station, KZ5KZ, operated by RM and a KZ5 group at a recent outdoor church fair, accepted no traffic yet the spot contact made for listeners created more favorable opinion for ham radio than would have the acceptance of a basketful of rubber-stamp messages. CG, on the net frequency, transmits the ARRL bulletin on c.w. just before Monday night AREC drill and repeats it by voice during drill period. TB flew in from KP4-Land — an FCC examiner for a one-day stand at Albrook AFB — just so KZ5s could take the exams and get FCC tickets. JF, Class III OO, is working for Class I rating. GD worked MP for his 135th KZ5 contact.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Samuel A. Greenlee, W6ESR — SEC: KSX. RMs: CMN, DDE, FYW, LDR. I will do my utmost to justify the confidence you implied when you elected me to be your SCM. Now, more than ever, a good SCM must constantly work for the promotion of all-out activity in ALL phases of ham radio. WE MUST KEEP OPERATING — or lose forever the choice frequencies we now have. There is ample proof that we are needed, and wanted. Our help has been solicited by governmental and military agencies. It is a sad commentary on the resourcefulness of the ham that so many of us have given in to TVI. TVI can be licked and is being licked! Let's clean up our rigs and KEEP OPERATING. Thanks for the swell flood of reports. KYV, GYH, SD/6, CKO, CMN, and BHG made the BPL. CMN thanks the clubs and individuals who helped with SD/6 Hobby Show station. He plans six-months rest and rebuild period. CKO is going back to W6-Land for a few months. KYV is doing a grand job handling G.I. traffic from JA and KG6. BHG carries a heavy schedule as OBS, ORS, and OPS. KWG, ex-2YDG, is a new member of our ORS ranks. HOV advises of a new YL ham, KOY. Welcome, Betty. VIM our ex-SCM, writes from W5-Land of QRM from new YL jr. operator. He will be on the air soon. IOX, Acting SCM, is picking up his traffic schedules again. From COZ's report: HYO, IGE, JMY, KAA, LEI, and WVG are joining the Air Force. Aloha, fellows. The Pomona H. S. Radio Club gave two table radios with permanent servicing to a local hospital! IDM is back on 28 Mc. GUM is on 3.5 Mc. HCC has a nice-sounding half-kw. COZ has a classy new mike boom. Social note: ZGY says he survived Army life so far so now it's wedding bells. (What a man!) Thanks, Gene. FYW reports: IWD and YCZ are experimenting with 160-meter mobile and HJL is 40-meter DX man. BLY is knocking them dead with a new Viking transmitter. Your SCM was guest at Radio 50 Club #2 (Whittier) dinner meeting and had a perfect evening. The Club operates a smooth AREC net on 3.8, 28, and 144 Mc. EBK (3.5-Mc. c.w.) is OBS on 3.8 and 144 Mc. AM is erecting ANOTHER rhombic on Norway. He has just completed one on South Africa. The Mike and Key Club (Santa Monica) is starting beginners' code classes. Contact OHM. The YLRL is plenty active on c.w., 'phone and AREC. The AREC is going great under KSX, who is working now on frequency allocations for RACES in coöperation with representatives of law enforcement and other interested agencies. The Val-Area Net (CWS, EC) is divided into six sections, each covering a community. The Mid-Cities Net (DCB, EC) has a fine coverage of several cities, each with a control station. New ECs: LKF, San Luis Obispo; ZRM, South Bay Area; WOU, Crescent Bay Area (replacing KSX). Traffic: W6KYV 1686, UHY 1324, GYH 1058, SD/6 817, CKO 715, JQB 267, CMN 258, DTY 181, DBY 180, BHG 122, HOV 88, HLZ 42, FMG 41, COZ 31, FYW 29, BLY 20, WMQ 14, QLM 13, EBK 7, AM 6, YSK 2, KSX 1.

(*Continued on page 80*)

ARIZONA — SCM, Jim Kennedy, W7MID — An Arizona C.W. Party, sponsored by MLL and MAE, brought out twenty of the gang on 3.5 and 7 Mc. LUK resigned as Phoenix EC, and PUM and MID have taken over the job jointly. OLB is in Alabama for Air Force training, and his schedules with Phoenix have been working out nicely. JGZ now is the Tucson outlet for SSN. OYJ moved and now can't find a place to put up an antenna. JYZ is up to 100 countries. HDO and LVR did nice jobs in recent Frequency Measuring Tests as part of their job as Official Observers. Anyone else interested in this appointment? MTZ reports good progress on the License Plate Bill for the Legislature to consider in January. Indications are favorable this time, but we need the support of everyone to get it through. Traffic: W7BH 399, K7NRZ/W7OTQ 150, W7JGZ 11, PUM 10, LVR 6.

SAN DIEGO — SCM, Ellen White, W6YYM — Asst. SCMs: Shelley E. Trotter, 6BAM; Richard E. Huddleston, 6DLN; Thomas H. Wells, 6EWU. SEC: NBJ. RM: ELQ. ECs: DEY and VJQ. IVARA recently installed an ART-13 and a Super Pro in Red Cross Headquarters in El Centro. The Orange County gang is showing a great deal of interest and activity in AREC affairs. The official opening of the AREC room in Balboa Park, San Diego, is scheduled for July 2, 1951. DLN is holding Sunday night schedules with Adak in the Aleutians. 7FOF/6 is expecting two new additions: one harmonic, and one Class A ticket! BVI hopes to have portable 3.8-Mc. rig on the air shortly. IZG is showing off new 20-w.p.m. sticker and brand-new vibroplex. BFE lost his *QST*s, dating back to 1924, in a fire but he managed to save his radio gear, which we understand was quite water damaged. CHV, YYN, and IZG are known to have put in hot week ends on the CD Party. APG is heard plugging away on 14-Mc. c.w. DIN's XYL has been waiting for her ticket for almost two months. YDK himself, Laddie Konas, is sweating it out in Central Korea. New officers of the San Diego Amateur Radio Club are: ESN, pres.; DIN, vice-pres.; GDI, secy.; FOP, treas. ZYD is running for president of the National YLRL. YSP is bragging about his new combination ham shack and rumpus room in the back yard. UDU, local FCC radio engineer, gave an FB talk at the May meeting of the San Diego Club. Soledad is planning to put on a display again this year at the San Diego County Fair. The Coronado Radio Club is hard at work on its new club station on the Silver Strand. EDJ is heard on 3.8 Mc. using s.s.s.c. GPF is working with RTTY on 144 Mc. VEO is a June physics graduate of State College. Traffic: W6BAM 826, ELQ 251, IZG 88, FCT 21, CHV 10, BVI 7.

WEST GULF DIVISION

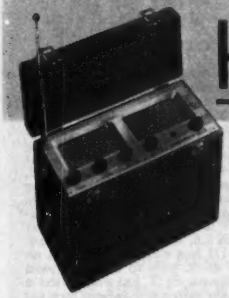
NORTHERN TEXAS — SCM, William A. Green, W5BKH — Asst. SCM, Joseph G. Buch, 5CDU. SEC: AAO. RMs: GZU and LSN. PAM: IWQ. OO appointment was made to LDN who is back on the air with 250 watts. QDF is the proud possessor of an A-1 Operator certificate but must QRT because of college work. Congratulations to SQW in overcoming the handicap of blindness to obtain his ticket. The Wichita Falls ARC elected N. C. Grantham, pres.; AVA, vice-pres.; and OHE, secy.-treas. The East Texas ARC, under the direction of RHC and CTM, put on a fine old-fashioned ham picnic at Sulphur Springs, at which OIS and IXV were successful in finding the hidden transmitters. At Lubbock the South Plains ARC, with JQD and NFO directing, staged their usual fine hamfest. Particularly enjoyed were talks by NW, our "Veep", and CA, our Director. The NWTEN, with BFA as NCS, was presented the SEC Trophy Cup at this time. Summer static is with us again but thanks to IWQ and GZU and their gang much traffic still is moving; in fact the Northern Texas nets now seem to be a clearing house for the Southwest. MTL is reorganising his station for 150 watts on all bands. MARS activity is steadily increasing with 1WQ, CWS, and ARK leading the way. SRB has Viking and NC-173 on 28 Mc. SIN is on 28 Mc. with 24Gs and a 50-ft. beam, while SLP runs a pair of 807s. Traffic: (Apr.) W5LSN 1115, GZU 870, PTR 199, IWQ 164, BKH 159, ARK 155, LEZ 85, QDF 53, JOG 19, JUN 12, QQU 6. (Mar.) W5ARK 180.

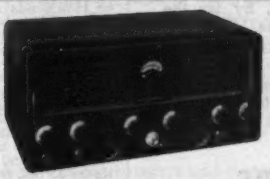
OKLAHOMA — SCM, Frank E. Fisher, W5AHT/AST — SEC: AGM. RM: FOG. PAM: ATJ. Oklahoma County holds two AREC drills each week. EHC worked aeronautical mobile 6AYN/5 from his mobile rig on 3.9 Mc. K5NRJ finds time for traffic in spite of the Navy and college work. OLZ will remain active during the summer. FOG and MRK are taking a big chunk of the relay load. OPEN now has a short mid-week session at noon; a fine idea for emergency preparedness. BIE did a nice job with his mobile rig in assisting police in search for a kidnapped girl and her escort. OQM, SEK, and HEL, together with PA, FRB, CUH, WQ, PHD, JFT, and 6UBV/5M, assisted in this work. CKQ is a busy man these days with a new business and trying to push Amateur License Plate Legislation through the State Legislature. OWG, RST, and others have been very active in this work. LCN has a new job which keeps him hustling to make the Net. Harry has worked hard as NCS of the slow-speed section of OLZ as well as his regular net duties. GZM has moved to Ardmore and is on 3.5 Mc.

(*Continued on page 82*)

ALLIED for peak service!

hallicrafters for peak performance!





S-72 **4-Band Portable.** Tops for versatile, powerful all-wave reception. Covers 4 bands: 540-1600 kc, 1500-4400 kc, 4.3-13 mc, 12-30.5 mc. Features: 2 built-in antennas—loop for standard AM, 61" whip for short wave; has sensitivity control, AVC, BFO, main and fine tuning controls, phone jack. Handsome brown leatherette carrying case, 14 x 12¼ x 7¼". For 105-125 volts DC, or 50-60 cycle AC, or self-contained battery. With tubes, less battery. Shpg. wt., 16 lbs.

97-505. S-72 Portable. *Only* **$109.95**
$16.49 down, $8.26 monthly for 12 mos.
80-585. A-B Battery Pack. *Net* **$4.17**

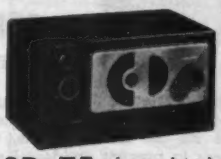
SX-71 **Popular Double-IF Receiver.** Covers 5 bands: 538-1650 kc, 1600-4800 kc, 4.6-13.5 mc, 12.5-35 mc, 46-56 mc. Features: electrical bandspread; tuned RF stage, 3-step crystal filter; NBFM adapter; automatic noise limiter; calibrated "S" meter; BFO; tone control; wide-vision dials; temperature compensation; universal antenna input. Steel cabinet, 18½ x 7⅞ x 12". For 105-125 volts, 50-60 cycles. Complete with all tubes. Shpg. wt., 33 lbs.

97-506. SX-71, less speaker. *Only* **$199.50**
$29.93 down, $14.98 monthly for 12 mos.
SX-71, with R-46 speaker. 63 lbs. *Net* **$219.45**

S-76 **New Double-Conversion Receiver.** Amazing selectivity at moderate cost! Exclusive 5-position, 50 kc adjustable second IF, providing 500 cycle band width at 6 db down, 3 kc at 60 db down, and 3 broad selectivity positions. Covers 538-1650 kc, 1720-4900 kc, 4.6-13 mc, 12-34 mc. Full electrical bandspread; built-in 4½" "S" meter; tuned RF; BFO; ANL; tone control. Steel cabinet, 18½ x 9 x 9½". For 115 volts, 50-60 cycles AC. Complete with all tubes. Shpg. wt., 40 lbs.

97-746. S-76, less speaker. *Only* **$169.50**
$25.43 down, $12.73 monthly for 12 mos.
S-76, with R-46 speaker. 70 lbs. *Net* **$189.45**

For the Short Wave Fan! • For the Novice Licensee!



Get on the air at LOW COST!

S-77 **Special AC-DC Value.** Here's versatile communications quality at low cost. Covers 540 kc to 44 mc continuously for all AM broadcast and Amateur and foreign short wave. Controls: main tuning and bandspread dials, noise limiter, AVC, BFO on-off, BFO pitch; RF gain, volume, AM-CW switch, Tone-AC on-off, Standby-Receive. Built-in PM speaker and headphone jack. In steel cabinet, 18½ x 8½ x 11". For 105-125 volts DC or 50-60 cycles AC. Complete with tubes. Shpg. wt., 29 lbs.

97-747. S-77 Receiver. *Only* **$99.95**
$14.99 down, $7.51 monthly for 12 mos.

S-38B Here's the all-star, all-wave value that amazes even the experts. Covers 4 full wave bands, continuous range from 540 kc to 32 mc. Receives AM broadcast and all important short wave frequencies. Features: full electrical bandspread; Band Selector; Voice-Code switch; Speaker-headphones switch; Standby-receive switch; latest PM speaker. Handsome furniture-steel cabinet, 12⅞ x 7⅜ x 7¼". For 105-125 volts DC, or 50-60 cycles AC. Complete with tubes. Shpg. wt., 15 lbs.

97-508. S-38B Receiver. *Only* **$49.50**
$4.95 down, $5.25 monthly for 9 mos.

SR-75 A complete *basic* Ham station for transmitting and receiving on all popular Amateur bands! Features: 4 band tuning—540-1650 kc, 1.65-5.1 mc, 5-14.5 mc, 13-32 mc. With 5" speaker and headphone jacks. Crystal-controlled transmitter includes coils for 80, 40, 20, 11 and 10 meter bands. 10-watt input 50L6GT final amplifier also serves as receiver output. Has keying relay. In steel cabinet, 12⅞ x 7⅜ x 7". For 105-125 volts 50-60 cycles AC. Complete with all tubes and coils. Shpg. wt., 18 lbs.

97-745. SR-75 Station. *Only* **$89.95**
$13.50 down, $6.75 monthly for 12 mos.

free 212-PAGE ALLIED CATALOG

Send for the only complete Buying Guide to everything in Radio, TV and Industrial Electronics. Make your selections from the world's largest stocks of quality equipment—at lowest, money-saving prices. Get every buying advantage at ALLIED—speedy delivery, expert personal help and assured satisfaction. Write for your FREE copy of the 212-page ALLIED Catalog today.

ALLIED RADIO

ALLIED RADIO CORP. Dept. 15-G-1
833 W. Jackson Blvd., Chicago 7, Illinois

☐ Send FREE 212-Page ALLIED Catalog
☐ Enter order for Hallicrafters Model_____

Enclosed $_____ ☐ Full Payment ☐ Part Payment. (Bal. C.O.D.)

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

and OLZ. Boyce has been on the air for 14 years and has never owned a modulator. PNG has new Lysco exciter. All members of Ardmore AREC now own BC745s on net frequency of 3825 kc. SCX is changing to plate modulation. SNM is completing a 400-watt rig using p.p. 814s. QZD has been vacationing in Florida. JP claims his rig now is TVI-free. Traffic: W5MRK 213, GZK 204, FOM 170, FOG 151, MQI 90, AHT 76, OQD 71, WQ 65, FEC 55, K5NRJ 55, K5WAH 55, W5IOW 53, LCN 51, RIT 48, MFX 38, JHA 31, PHR 23, EHC 20, HXG 19, OWG 14.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — BHO has been appointed OPS. NKM is graduating from San Marcos College and going back to Carrizo Springs. HSX is active in STEN and MARS. RFG is mobile on 3.8, 14, and 28 Mc. with 35 watts, and works CE1CP on 1330 Sundays. AQE has been active in OLZ, NTX, and STEN. LM is busy on 3.5, 7, and 28 Mc. PYC is building high power. QOT has HQ-129X. GLS has fifteen-element 50 feet up on 2. QCF is active in STEN and 2-meter net. STEN was recently lauded by FCC high brass including Commissioner Sterling. FEK has new sixteen-element beam on 144 Mc. QJS is having good luck with clamp tube modulation on 3.8 and 144 Mc. LLT is now on 144 Mc. QZG has 2-meter f.m. mobile. QGU is on 3.8, 7, 14, and 28 Mc. when not helping with hamfests. BDI has worked Louisiana on 144 Mc. BHO transplanted a 40-ft. pole to his front yard for a beam and 75-meter antenna. SCY has completed a rig for 28 Mc. ON has 150 watts with a hopped-up receiver on 144 Mc.; he has worked 110 stations on 144 Mc. in 3 states. JUF is DXing with 125 watts on 14-Mc. 'phone and has a 32V-2 and a three-element wide-spaced beam. RVI needs only 2 more for WAS on 7 Mc. with 35 watts. OKX works all-band c.w. with 100 watts, SX-42 and ½-wave 40-meter dipole. NKY is on 7-Mc. c.w. AEQ got Class A and ragchews on 7-Mc. c.w. with 500 watts. RSJ has kw. on 3.5- and 7-Mc. c.w. BKW is rebuilding to use 304TLs and putting up rhombic on 75 meters on his 10 acres. DFC has new mobile rig on 28 and 144 Mc. OUG has 300 watts on 3.8 Mc. with some fancy audio gear. LI has 10-meter three-element beam. LSE's ham shack is 20 x 30 ft. and jam full of gear, lathes, etc. QHO is on 80 with a BC-654. FQS gave an FB lecture to HARC on antenna measurements. IPT is doing a nice job as EC. JRV is new AREC member. PTV and RIH alternate as NCS of the c.w. section net daily at 2100 on 3657 kc., also the South Texas traffic net daily from 1700 to 1800 on 3830-kc. 'phone. GZU and PTV provide liaison between the section nets at 1830 on 3630-kc. c.w. Traffic: W5PTV 823, PTR 199, BCN 131, MN 128, QFA 107, RIH 34, AQE 17, QEM 17, FIW 9, RFG 6, ABQ 4, GEL 4, IPT 4.

NEW MEXICO — SCM, Lawrence R. Walsh, W5SMA — Acting Richard J. Matthias, W5BIW. SMA, the SCM, still is in DX-Land. PLK's efforts as SEC have resulted in some good organization along the lines of emergency planning. The 3.8-Mc. 'phone net is handling a steady amount of traffic. On May 13th, the net roll-call was changed to 7:00 A.M. from 7:30 for the duration of the summer. The other two schedules, Tues. and Thurs., will remain the same, 6 P.M. The Sandia Base Radio Club's new roster shows 248 members. The Los Alamos Club is preparing a map of the State of New Mexico which will be surrounded with as many QSLs as possible from amateurs in New Mexico. The idea is to use map pins and thread to tie in the cards surrounding the map with the hometown of the station. Hams, Associated had an ARRL quiz at its last meeting. The Mesilla Valley Radio Club has included in its regular order of business a "Band Activities" discussion period. At its last meeting, PFG suggested that from time to time each member contribute some interesting article or circuit to a general fund, these to be discussed and gone into at times when there is no other planned program. The Santa Fe Radio Club is sponsoring a code and basic theory class, in coöperation with CDO. Traffic: W5IGO 156, A5ZU 132, W5NKG 91, ZU 59, A5NKG 48, W5PLK 23, SU 3.

CANADA
MARITIME DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC FQ sends in a nice traffic total. A nice bulletin was received from the FRAC. GJ has been working on electronic keyer. VJ and RF have been mobiling. AAY and WB are working on their 'phone rigs. BX is on with 100 watts. CM says no QRP next SS Contest. NF moved to new QTH across the river. LX is building a new rig. OL soon will be working out of Toronto as VE1OL/3. A new ham in Fredericton is JQ. In the N.S. Area the 144-Mc. active roll consists of MA, BT, ID, FQ, BC, VN, QF, NO, KM, TA, ZZ, HC, and QZ. The Halifax gang learned with regret of the sudden passing of QM. Among visitors recently was FP8AW (HB9AW), escorted by his old friend PT. IJ has moved to Montreal. SF has been working on the 3.8-Mc. s.s.b. rig. New mobilers on 3.8 Mc. are KM and AXR. OM, active on the MTN, announces GS is a new man on the MTN. GO recently got his ticket. VW is a recently-active 14-Mc. c.w. station. AAK, AAL, DS, and MK are working on 144-Mc. rigs. AAK now is an ORS. DS is quite active in AFARS work, both c.w. and 'phone on 3.5 Mc. ZM claims to be the

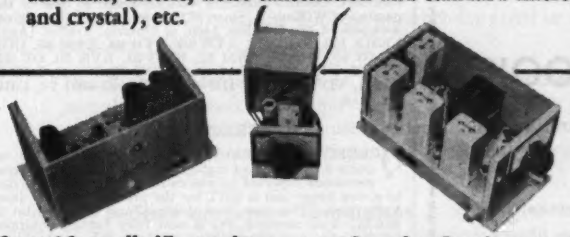
(Continued on page 84)

HARVEY has a message for the Civilian Defense Purchaser!

It has been proven that the Two-Meter (144 to 150MC) Communications Equipment is the most dependable and reliable equipment for Civilian Defense use. Through simulated bomb attacks, floods, fires and other disasters which disrupt normal communications, it has been found that emergency communications go forward with remarkable ease in your town or city, and from town-to-town and city-to-city, through the use of this equipment.

We, here at HARVEY, have all the equipment and parts that you may need, whether for installation or construction, of an emergency communications station for operation on any of the designated bands... fixed station, mobile or portable. We also have complete packaged units for installation in autos, homes, public buildings, bomb shelters, etc. We can custom build equipment to fit your individual requirements.

We carry stocks of the nation's foremost brands... transmitters, tubes, receivers, speakers, transformers, AC power supplies for fixed stations, mobile power supplies for 6v or 12v operations, gas engine operated generators for 6v DC or 110v AC, antennas, meters, noise-cancellation and standard microphones (carbon, dynamic and crystal), etc.



Crystal Controlled Transmitter

Designed for stable, trouble-free operation in the 144-150 mc bands. Couples to any co-ax fed 2 Meter antenna. Uses any power supply providing 300v. at 200 ma. Screw-driver adjusted tuning controls. 7 tubes. Components and tubes are standard for replacement ease. Co-ax connectors. 5½ x 9½ x 5½ in., with universal mounting flanges. Prices are less power supply.

Transmitter **$74.95**
Wired and tested

Transmitter **$49.95**
In kit form

Also Ideal For CAP

Superhet Receiver

An excellent 10 tube receiver, sensitive, stable, selective. Highly efficient with precision vernier tuning over 144-150 mc. Exceptional signal-to-noise ratio. Minimized power requirements with total battery drain only 22 watts. Matching cabinet, same size as xmitter, with universal mounting flanges. Jones plug and co-ax connectors. Prices are less power supply and speaker.

Receiver **$94.95**
Wired and tested

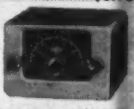
Receiver **$59.95**
In kit form, uses Oscillator of Receiver

For external local oscillator. Mounting kit less oscillator, add to above **$5.00**

Gonset Converters

3-30 Gonset Converter; 10-11 Gonset Converter; 20 Meter Gonset Converter; 75 Meter Gonset Converter. Shipping weight each, 4½ lbs. **$44.75**
Gonset Tri-Band Converter **$47.60**
Model B Noise Clipper **$9.25**
Universal Steering Post for use with all Gonset Converters **$3.90**

NEW GONSET TWO-METER CONVERTER; superheterodyne... same size and appearance as Tri-Band Converter and FM Tuner. **$44.50**



HARVEY is headquarters for these famous Emergency Receivers. High quality emergency band FM receivers for application, ANYWHERE you are you can HEAR police calls, fire alarms, bus dispatchers, railroad communication, ships at sea, etc.

POLICE-ALARM

Mobile FM Receiver 152

Model M-101 covers 152 mc to 162 mc Band **$72.50**

Model M-51 covers 30 to 50 mc's.

MONITORADIO

For Home or Fixed Location

Model PR-31 for 30 to 50 mc band ... **$44.95** complete.

Model PR-B for 152 to 162 mc band ... **$44.95**, complete with 14" whip indoor antenna.

MUNICIPALITIES AND EMERGENCY SERVICES are invited to consult us on any of their emergency radio communications equipment problems. Six members of our staff are fully qualified and licensed operators. Their services are available to you. No obligation, of course.

Telephone: LUxemburg 2-1500

HARVEY RADIO COMPANY INC.

103 West 43rd St., New York 18, N. Y.

VISIT HARVEY'S AUDIOTORIUM—Come in and visit our new Sound Department...

NOTE: In view of the rapidly changing price situation in both complete units and components we wish to emphasize that all prices are subject to change without notice, and are Net, F.O.B., N. Y. C.

first and only YL in AFARS. She has deserted 14-Mc. 'phone for 3.5-Mc. c.w. YR and YC joined the RCAF. MK got his WAVE, WAC, and WAS during April. AL has been appointed Flight Leader in AFARS. Traffic: VE1FQ 137, MK 92, AAK 64, YV 57, OM 42, AAL 23, ZO 16, PS 15, YO 13, AL 11, KI 11, IO 10, JS 10, KG 10, KF 7, ABJ 6, DB 6, AB 5, DS 5, ABA 4.

ONTARIO DIVISION

ONTARIO — SCM, G. Eric Farquhar, VE3IA — Asst. SCM c.w., W. Guillot, 3BUR. Asst. SCM 'phone, E. Kimble, 3FQ. The Ottawa Amateur Radio Club, at its May meeting, heard a most interesting talk on mobile technique delivered by George Davis, OJ, Ottawa Area EC, outlined the organization of the AREC. Also in Ottawa, under the auspices of the Ottawa Valley Squadron of the AFARS, a well-attended banquet was held in April with QB, the Squadron Controller, presiding. General Worthington, head of civil defense for Canada, spoke and outlined federal plans for civil defense. The Mohawk Amateur Radio Society of Hamilton turns out a fine bulletin. CJ has returned from his trip to the Cayman Islands, where he operated under the call VP5BP. He recently described his trip and showed colored films to a packed house at McMaster University, meeting place of the HARC. The following evening the Nortown Radio Club of Toronto was host to a contingent from Hamilton. Very encouraging reports have been turned in on the S.E.T. held in Ontario during April. Toronto and Hamilton 28-Mc. drills are going great guns. NZ was awarded the Arthur Palmer Memorial Plaque by the Queen City Club as the outstanding member of the year. BQP is heard on 144 Mc. The Quinte Amateur Radio Club, an affiliate of ARRL, held ladies' night recently. ABG, RW, AZS, NN, and BHK are active on 50 Mc. AZV was presented with the Paul Zavitsky Memorial Award as the outstanding amateur in the Oshawa Area. BBM is heard on 3.5 Mc. Up Windsor way the Frontier Radio Assn. is whipping into shape one of the finest emergency set-ups to be found anywhere. The Association's May issue of *MIM* is worthwhile reading and should be of value to all AREC members. Ontario amateurs were saddened to hear of the passing of William Y. Sloan of Toronto, one of the original members of the Wireless Assn. of Ontario. Traffic: (Apr.) VE3IA 193, BUR 116, AYW 69, ATR 65, EAM 60, DGZ 45, GI 35, WY 33, BBM 32, BMG 31, BVR 30, DU 29, BTZ 25, BNQ 17, BPE 17, TO 15, PH 13, WE 11, DJD 8, APS 4, VD 4, DEP 3, DH 3. (Mar.) VE3AHO 74, DHQ 31, TO 1.

QUEBEC DIVISION

QUEBEC — SCM, Gordon A. Lynn, VE2GL — BB reports a falling off of traffic. AGG had to QRP because somebody reported he was causing BCI. KG is moving to a new house and is QRT for the present. CE2EL, from Valparaiso, Chile, now is in Montreal and was a visitor to MARC April meeting. SG is now fully battery-equipped for receiving and transmitting at home. RF is rebuilding, and has 1-kw. alternator and is looking for gas-engine to power it. JN has all-battery auxiliary station in readiness for emergencies, with a gas-operated d.c. generator and 300-watt 110-volt a.c. portable unit. St. Johns Radio Club had a booth at the St. John's Industrial and Commercial Exhibition, which was held from Mar. 30th to April 7th. The club station, APX, was operated from the booth. CA reports conditions on 14 Mc. to the North Country extremely poor with a dropping off of traffic. He reports that last November his XYL, Phyllis, received a message from the North for an addressee in Vancouver which was forwarded by mail and the last week of April an air mail letter was received from Bangkok, Siam, dated April 12th, expressing thanks for the message and enclosing a reply which was duly transmitted. Reports were very scarce this month. Once again, let's hear from you. Traffic: (Apr.) VE2BB 61, GL 11, LO 9. (Mar.) VE2BB 123.

VANALTA DIVISION

ALBERTA — SCM, Sydney T. Jones, VE6MJ — LZ plans microwave experiments in the near future. EO is installing antenna and preparing radio room in new City Hall for amateur civil defense and emergency headquarters. HM was presented with a life membership certificate in the Northern Alberta Radio Club on his retirement from C.N.R. after forty-three years service. The Ladies Auxiliary of the local club staged a very amusing skit at a recent social meeting. EH is going great guns on 14-Mc. mobile. OE has great plans for a wide-spaced 14-Mc. beam. AREC really paid off recently in getting food to Medicine Hat. Operation "WETHAT" was a success, reports EC Neilson. Nice going, gang. MB plans to attend summer school again this year. OC reports the organization of AREC in the Peace River country is progressing. Look for them Sundays about noon on 3.8 Mc. Don't forget the Alberta Hamfest in Edmonton September 1 and 2. Make your reservations early!! Address Secretary, Northern Alberta Radio Club, Edmonton. Traffic: VE6OE 397, EO 6, MJ 5.

(Continued on page 86)

NEWARK! Foremost distributor of electronics equipment...

FOR THE AMATEUR AND INDUSTRIAL USER

NEWARK Now Offers the Widest Selection in the Industry Through Their Comprehensive 160-page Catalog

The Most Complete Catalog in the industry! Coming at a time when lines and prices are stabilizing, this catalog will be enthusiastically welcomed by Amateurs and industrial concerns. All of the latest developments in electronics have been incorporated, and only current, readily available items are listed. Newark's catalog is the first to feature such outstanding new Amateur equipment as the Gonset FM communications tuners (**97F105** for 30-40 mc, **97F106** for 40-50 mc, **97F107** for 88-108 mc, **97F108** for 152-162 mc—each..**$59.50**), and the famous Eldico line, including the model TR-75TV TVI-Proof Transmitter (**97F154**..**$59.95**) and the 2-meter superhet for fixed or mobile operation (**97F150**..**$94.95**).

The World's Largest Stock of radio, television and electronics supplies is Newark's trademark. Only tested products of nationally-known manufacturers are carried, and wherever possible, complete lines are listed, making it faster and more convenient to order from Newark.

A Staff of Expert Technicians is waiting to help you with your technical problems. Don't hesitate to call on their service if ever you need real engineering "know-how". Selection problems are also easily ironed out by Newark's personalized service.

One Centrally-Located Source for all orders. No re-routing, no delay in handling . . . at Newark. Assure yourself of speedy delivery, lowest prices and expert service by ordering from the one company best staffed and best stocked to handle all of your needs.

THE NEW ELECTRONICS REFERENCE BOOK

Containing the widest selection of electronics equipment and supplies in the industry. If you have not yet received your copy of this up-to-minute parts catalog, send for it today.

NEWARK ELECTRIC COMPANY

323 WEST MADISON STREET • CHICAGO 6, ILLINOIS

BRITISH COLUMBIA — SCM, Ernest Savage, VE7FB — Your new SEC is DD, 6650 Balsam Street, Vancouver. Thanks for the hard work in making this Province emergency-minded and for the very active nets and members of the Amateur Radio Emergency Corps goes to Ralph Norman, who is retiring as SEC so as to fulfill his commitments to the RCAF. Let's get behind Cecil and give him our full support. We welcome ALK, ex-8BC, and TU, ex-2AJE, to British Columbia. LQ now is 2VP. The North Vancouver ARC is doing a very good job in making new amateurs and increasing the interest in our hobby. ZF is looking for a pair of 833s. ALP, ALU, ARS, ANC, and XM, all in the area of Kimberly and Cranbrook, are working 144 Mc. and having good QSOs. AC worked VP8AK. The Vancouver ARC held its annual tube hunt at Capilano Canyon with great success. From there the members were convoyed by mobiles to the home of AFM. The same Sunday, Totem was on Little Mountain testing its gear for Field Day. The VARC arrived there and made the biggest collection of mobiles in one spot so far for Vancouver. AEY is back from wintering in Southern U.S.A. Who is coming to the National ARRL Convention in Seattle? We want to form a convoy from the border at the Pacific Highway, Route 99, and really let the Ws know who is who. Please get in your reservations for the Convention and the hotels to John Gruble or me immediately. Traffic: VE7XA 60, AOQ 42, AC 26, ZF 7.

PRAIRIE DIVISION

MANITOBA — SCM, A. W. Morley, VE4AM — PAM: FA. My apologies to the BARC. Through a misunderstanding its news has not been reaching the column. The Club was active on Field Day and the AREC is whipping into shape. How about an EC for Brandon? CE has new Select-O-Ject working fine. BS got a new rig running 40 watts on 75-meter 'phone and promptly worked himself a ZL. DT has his pilot's license. SC is working out on 14-Mc. 'phone and c.w. with an 810 to a folded dipole. MP has mobile rig working on 14 Mc. XU, a new ham, has an 840 and uses a 6AG7-RK39 on 14-Mc. c.w. LC is trying n.f.m. in preparation for 75-meter 'phone. GQ made a nice trip to Montreal. ER is using clamper tube modulation on 75 meters. YZ is heard on 14-Mc. 'phone. The Dauphin Hamfest is scheduled for the Labor Day week end in September. More details can be had from PA, who assures me it will be better than ever. How about more news this month? Don't let the summer months throw us.

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — JV received 120 DXCC sticker and has 37 zones to his credit. RD transferred to new repeater station at Melville. JO moved to Saskatoon and is mobile on 75-meter 'phone, along with EE and AN. JF has a 144-Mc. job working along with his 50-Mc. rig. CJ is on 50 Mc. with 18 watts to an 832 final, and a three-element beam. JH has been transferred to VE8-Land. BZ, Rosetown Area EC, reports 14 members reporting into the Sunday trials on 3740 kc. at 11 A.M. DD has new three-element 28-Mc. beam. UO puts a nice signal on 75 meters, using 813 clamp tube modulated. JZ is a new call at Watson. 8AO visited the Saskatoon gang. His XYL, Mary, passed her amateur exam. FY is building bandswitching VFO crystal rig with a pair of 807s in the final. OB bought a new car and suffered moderate damages when hit two weeks later. RM, Moose Jaw EC, put on a demonstration for the local authorities. UC has new master mount whip. DR deserted 75 meters for 14 Mc. and DX. Traffic: (Apr.) VE5HR 33, GI 19, MA 18, YF 8, LL 7, PJ 7, TE 7, NG 6, DS 4, QL 4, BJ 2, DN 2, EE 2, WH 2, WJ 2, UC/M 1. (Mar.) VE5TE 28, DS 19, MA 10, LF 8, PQ 5, GL 4.

Strays

Foreign amateurs wishing to send cards to ARRL for awards are often puzzled by the different rates of exchange, and are usually reluctant to trust their QSLs to the mails unless they can be confident of registered mail service both ways. For the benefit of these amateurs, the following one-way postal rate information is offered:

100 DXCC cards....70¢ U. S. currency (14 IRC)
48 WAS cards....50¢ U. S. currency (10 IRC)
6 WAC cards....31¢ U. S. currency (7 IRC)
(One IRC should be included for each 5 additional cards.)

The above figures cover first-class postage and registry fees. Return postage remittance may be made by International Reply Coupons, International Money Order, U. S. stamps, or U. S. currency.

'Phone Man's V.F.O.

(Continued from page 19)

microphone connector is mounted under the dial, at the center. A coax output connector is placed at the rear, near the 6AG7, and there is also a four-contact connector for the a.c. line and a control relay if one is used.

The unit is designed to fit into a standard 8 × 7 × 12-inch utility box. Rows of half-inch holes are punched along the three sides, near the top, to provide for ventilation.

Adjustment

The first step in adjustment of the VFO is setting R_{13}. The tap should be set at the point of maximum resistance that will permit the VR tube to start reliably when the power is turned on. If, after subsequent adjustment of the 6AG7 output circuit, the VR tube fails to ignite, the resistor tap should be readjusted downward to a lower resistance.

For 80-meter 'phone work, set C_1 at minimum and adjust C_2 (with a screwdriver through one of the ventilator holes) until the oscillator signal is heard at 4000 kc. Then C_1 should cover the range down to about 3750 kc. To work the low end of 80 and the 40-, 20- and 10-meter bands, set C_1 at *maximum* capacitance and adjust C_2 until the signal is heard at 3500 kc. The 11-meter band can be covered by setting C_2 to about 3350 kc., instead of 3500 kc. If L_2 is resonated at about 3750 kc., it should not require further adjustment for satisfactory operation over any of the above-mentioned ranges. When the oscillator unit is connected to the exciter through a length of coax table, it will be necessary to readjust the slug of L_2 to compensate for the added capacitance of the cable.

When it is desired to use the unit with a.m., the deviation control can be backed all the way off, or a switch can be provided to ground the grid of the 6J5 or open the plate-voltage line.

Happenings

(Continued from page 31)

eligible for the office of Vice-Director who does not possess the qualifications herein specified for the office of Director.

Article 7:

During the intervals between meetings of the Board of Directors the affairs of the corporation shall be administered by an Executive Committee consisting of the President, the First Vice-President, the General Manager and one member of the Board of Directors designated by the Board. The Board of Directors, in its discretion, may also appoint from amongst the officers, directors, or employees of the League not more than three additional members of the Executive Committee to serve for fixed terms between regular meetings of the Board of Directors. The Executive Committee shall meet at the call of the President, but no less often than bi-monthly. The Executive Committee may in its discretion submit for determination or decision by the members of the Board of Directors by mail vote any proposal pending before the Executive Committee. When such submission is made, it shall be made in precise terms embodying the text of a proposed resolution. Such resolution shall be deemed adopted upon the receipt of the affirmative mail votes of at least 60% of the members of the Board. Otherwise, it shall be deemed rejected. Such action shall be binding upon the Executive Committee.

(Continued on page 90)

Article 8:

A vacancy in the Board of Directors shall be deemed to occur upon the death, resignation or refusal to act of any Director. Upon the occurrence of such vacancy, the Secretary shall proclaim it and thereafter the duties of the Director shall be assumed by the Vice-Director, and the Vice-Director shall hold the office of Director for the remainder of the term for which he was elected Vice-Director. Should the office of both Director and Vice-Director be vacant, the vacancy shall be filled by appointment of the President.

Article 9:

The officers of the corporation shall be a President, not more than three Vice-Presidents, a Secretary and a Treasurer who shall be elected by the Board of Directors at their meeting in 1952 and biennially thereafter.

Article 10:

The Board of Directors may from time to time adopt By-Laws not inconsistent with these Articles and may alter, amend or repeal such By-Laws.

Article 11:

The membership of the League shall consist of (a) full members who shall be entitled to all rights and privileges of the League and (b) associate members who shall be entitled to all rights and privileges of the League except the right to vote for Directors and Vice-Directors and the right to hold office. The Board of Directors shall by appropriate By-Laws specify the requirements for membership and classes of membership provided, however, that the Board of Directors shall not terminate or reduce the rights of any member except for the lapse or termination of a condition now required as precedent to the exercise of such rights. Nothing herein contained shall preclude the Board of Directors from expelling a member upon good cause shown and after notice and an opportunity to be heard.

Article 12:

No person shall be eligible for the office of Director, Vice-Director or President who has not been a member of the League for at least four years or who does not hold a valid authorization as a radio amateur in accordance with the applicable federal laws and regulations prevailing at the time of his election. No person shall be eligible for the office of Director, Vice-Director or President who is commercially engaged in the manufacture, sale or rental of radio apparatus capable of being used in radio communication, or is commercially engaged in the publication of radio literature intended in whole or in part for consumption by radio amateurs.

Article 13:

The Board of Directors shall employ a General Manager who shall hold office for a term and upon such compensation as the Board and he may agree upon. The General Manager shall manage the affairs of the League under the direction of the Board of Directors. He shall be deemed a member of the Board, but without vote. He shall attend all meetings of the Board. He shall collect all monies due the League and turn them over to the Treasurer. He shall certify the accuracy of bills or vouchers on which money is to be paid and shall draw and countersign all checks. He shall have charge of the books and accounts of the League and shall furnish to the Board of Directors from time to time such statements as may be required. He shall conduct the general correspondence of the League and shall keep full records. He shall be in responsible charge, under the Board of Directors, of all property of the League. He shall, under the general direction of the Board of Directors, employ such personnel as may be necessary for the effective accomplishment of the purposes of the League. He shall be the General Manager of the League publications. He shall prepare and submit to each annual meeting of the Board of Directors a comprehensive report of the progress and status of the affairs of the League. He shall perform such other duties as may be assigned to him by the Board of Directors. His entire time shall be devoted to the affairs of the League. He shall furnish a bond satisfactory to the Board of Directors, the expense of the same to be borne by the League.

The yeas and nays being ordered, the question was decided in the affirmative: Whole number of votes cast, 16; necessary for adoption, 14; yeas, 16; nays, 0. Every Director voted in the affirmative except the President and Vice-President who abstained, as required. So the amended Articles of Association were ADOPTED.

68) Moved, by Mr. Dosland, to adopt the following resolutions:

(*Continued on page 93*)

LOOK STEINBERGS LOOK

SUPER SPECIALS

THESE PRICES ARE LOW!

100—$25

BC-345 JACK BOX

3½" x 3" x 1⅝" aluminum, 2 standard open-circuit jacks, 3-position switch, 6-contact banana plugs and jacks... **30¢**

100—$25

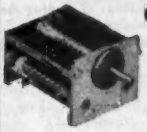
BC-1366 JACK BOX

4¼" x 3" x 2¼" aluminum, 1 standard open-circuit jack, 1 3-circuit mike jack, 150,000 ohm volume control, 5-position switch, 11-contact banana plugs and jacks..... **30¢**

100—$25

BC-213 JACK BOX

5¼" x 2⅜" x 2½" aluminum, 1 standard open-circuit jack, 1 3-circuit make jack, 150,000 ohm volume control, 4-position switch, 8-contact banana plugs and jacks..... **30¢**



CONDENSER SPECIAL

75 mmf, 4250 peak voltage, ceramic button insulation, adjustable spacing, straight-line capacity, precision construction, 3¼" long, 1¾" wide, shaft ¼" x 1", adjustable tension, double-bearing... **89¢**

HEAVY DUTY CASTERS

Build your own dolly, or mount your heavy equipment on these fine heavy-duty casters. Double composition wheels, free-turning ball bearing swivel, finest construction, quiet operation. 1⅞" wheel diameter, mounting plate centers 3" x 1¾", over-all height 2¾"..... **52¢**

Set of 4—$1.98

GRID BIAS CONTROL

2500 ohm, 25 watt Clarostat potentiometer, perfect grid-bias control for panel mounting, excellent heavy-duty P.A. speaker volume control, TV focus control, worth $5.20 list, brand new..... **69¢**

8/8/8 MFD. 500 V. D.C.

Triple 8 mfd. 500 working volt D.C. oil-filled condenser, common negative, solder terminals, hermetically sealed, 5" x 3⅜" x 2¼". A one-time buy..... **$1.95**

FILTER CHOKES

8 Henry 225 Ma., 100 ohm DC resistance. 2⅜" high, 2" wide, 3⅛" mtg. centers..... **$1.49**

8 Henry 100 Ma., 100 ohm DC resistance. 2" high, 1⅜" wide, 2¾" mtg. centers..... **95¢**

15 Henry, 50 Ma., 150 ohm DC resistance. 1⅜" high, 1¼" wide, 2" mtg. centers..... **59¢**

LIMITED QUANTITIES

Coil cords, 3-conductor, rubber, 8' extended	$ .95
24-volt ½ Amp. filament transformer	1.29
Butterfly condenser, smtll, 4-22 mmf	.80
APC type condenser, with shaft, 15 mmf	.25
3-pole, 3-position wafer rotary switch	.30
Amphenol 4-prong steatite socket with plate	.18
Johnson octal steatite wafer socket	.17
Patch cord, 5 ft. 2-cond. rubber, with PL-55	.30
Hand key, black crackle, tear shaped	.95
Sangamo F2L mica, .0015, 5000 volt	1.25
50 Mfd. 330 V. A.C. flash-camera condenser	5.95
110 V. A.C. relay, 30-Amp contacts, SPST plus SPDT	5.95
110 V. A.C. phono motor, add small fan as cooler	1.20

PHOSPHOR BRONZE AERIAL

125 ft. of the finest aerial wire obtainable. 42-strand phosphor-bronze with linen center. Will not stretch, very high tensile strength, diameter approximately same as No. 14 copper, very flexible. Excellent for transmitting or receiving antenna, control cable, guy wire. Regular list $4.95..... **90¢**

MINIMUM ORDER $2.00. Send 20% deposit with COD orders. Please include sufficient postage or; instruct us to ship by Express Collect. Overpayments will be refunded by check.

Steinbergs

633 WALNUT STREET • CINCINNATI 2, OHIO

Your order will receive my personal attention and will be shipped the same day order is received. We distribute all top-flight amateur lines . . . let us know what you need.
73, Julo Burnett, W8WHE

RESOLUTION NUMBER 1

Whereas *Article 7 of the Amended Articles of Association of the American Radio Relay League, Incorporated, provides, "The Board of Directors, in its discretion, may also appoint from amongst the officers, directors, or employees of the League not more than three additional members of the Executive Committee to serve for fixed terms between regular meetings of the Board of Directors"* and,

Whereas *F. E. Handy, Communications Manager of the American Radio Relay League, has for many years served as a member of the Executive Committee of the League with great faithfulness and ability; and his counsel and participation have been of great value*

Now, therefore, be it

Resolved *that in order to take advantage of the manifest ability of the said F. E. Handy and of his experience acquired in his capacity as Communications Manager of the American Radio Relay League, he, the said F. E. Handy, is hereby designated and appointed a member of the Executive Committee to serve as such until the convening of the next annual meeting of the Board of Directors.*

RESOLUTION NUMBER 2

Whereas *the Board of Directors of the American Radio Relay League has this day adopted an amendment to its Articles of Association under the laws of the State of Connecticut which amendment substitutes a new set of Articles for those heretofore prevailing, and*

Whereas *the Board of Directors has also this day adopted a new set of By-Laws governing the organization and administration of the American Radio Relay League and has repealed the Constitution and By-Laws heretofore prevailing, and*

Whereas *the Board of Directors is desirous of making the fullest possible use of the experience and abilities of Francis E. Handy, who has for many years served as Communications Manager of the American Radio Relay League to the great satisfaction of the Board of Directors and of the members, and*

Whereas *it is the desire of the Board to continue to avail itself of such services and to preserve the authority and importance of the work and leadership of the said F. E. Handy, and*

Whereas *the Board has this day designated the said F. E. Handy as a member of the Executive Committee,*

Now, therefore, be it

Resolved *that the said F. E. Handy is designated as Communications Manager to serve until the annual meeting of the Board of Directors to be held in 1952, and be it*

Further resolved *that the Executive Committee is instructed to prepare rules and regulations for the government of the Communications Department of the League and the organization of that Department, such rules and regulations to be of a tenor similar to the By-Laws and to the constitutional provisions now prevailing for that Department, and be it*

Further resolved *that such rules and regulations when adopted and published by the Executive Committee shall have the force and effect of By-Laws of the League, and be it*

Further resolved *that the Executive Committee shall publish such rules and regulations in pamphlet form, such pamphlet to include also all of the provisions of a regulatory character necessary to effect the policies and system described in the current publication of the American Radio Relay League entitled "Operating an Amateur Radio Station", and be it*

Further resolved *that upon the publication of the foregoing pamphlet the said F. E. Handy as Communications Manager shall be authorized as necessary from time to time to amend and revise the regulatory provisions therein contained. The amendments and revisions by him made shall be effective as of the date of their publication in "QST".*

RESOLUTION NUMBER 3

Whereas *Article 7 of the Amended Articles of Association of the American Radio Relay League, Incorporated, provides, "The Board of Directors, in its discretion, may also appoint from amongst the officers, directors, or employees of the League not more than three additional members of the Executive Committee to serve for fixed terms between regular meetings of the Board of Directors"* and,

Whereas *David Houghton, Treasurer of the American Radio Relay League, has for many years served as a member of the Executive Committee of the League with great faithfulness and ability; and his counsel and participation have been of great value,*

(Continued on page 94)

RADIO SHACK HAS 'EM

National

EST. 1914

for *AT ONCE* DELIVERY

NEW! SW-54

Brilliant new superhet covering 540 kc — 30 mc, with built-in speaker, bandspread, best communications features. AC/DC. 12BE6, 12BA6, 12AV6, 50C5, 35Z5 tubes. Tops for voice, music, code. Only 11 x 7 x 7"

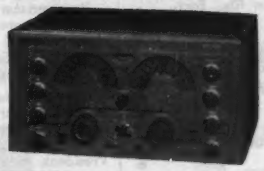
SW-54 ..... $49.95

ORDER BY MAIL, ORDER TODAY!

NEW! NC-125

9-tube superhet for hams and SWL's, covers 550 kc — 36 mc in 4 bands. Calibrated electrical bandspread on all ham bands. Select-O-Ject filter circuit. Less speaker. Phono input.

NC-125 ..... $149.50
NC-125TS 6" Speaker 11.00



FAMOUS NC-183

14 tubes plus VR-150, 5U4G. Covers 540 kc — 31 mc, plus 48-56 mc. Phono input and push-pull 8 watt audio. Two tuned RF stages. 5 bands; bandspread. Speaker extra.

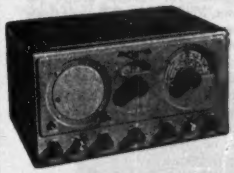
NC-183 ..... $279.00
NC-183TS 10" Speaker.. 16.00

GREAT HRO-50

50-430 kc, 480 kc — 35 mc; supplied with AA, B, C, D coils, 15 tubes. 8 watt p-p output within 1 db 50-15,000 at phono output. Many accessories available. Speaker extra.

HRO-50 ..... $369.00
HRO-50TS 10" Speaker. 18.00

"PLAY AS YOU PAY" FOR 1/4 DOWN ON ANY NATIONAL RECEIVER!



LAST CALL FOR NC-57!

NATIONAL has temporarily halted production of the NC-57 receiver and all others except the 4 sets above and the HFS due to shortage of parts. Radio Shack is fortunate to still have in stock A VERY LIMITED NUMBER OF NC-57's for immediate delivery. After they're gone there will be NO MORE! A superhet with one tuned RF stage, NC-57 covers 540 kc to 55 mc in 5 bands and has a built-in PM speaker. AC circuit with 7 tubes plus rectifier, featuring: CW osc., switch-selected CW, MVC, AVC, ANL; tone control; electrical bandspread on all bands. Tunes BC, SW, ham, police, fire, ship-shore. Order today!

NC-57 ..... $99.50

$24.95 down, while they last!

ORDER TODAY BY MAIL

SESSIONS CLOCK TURNS RADIOS, APPLIANCES ON OR ON-OFF!

Convert your radio into an alarm-clock radio, or operate air-conditioners, lamps, TV, mixers, etc., at preset times, with a world-famous SESSIONS electric switch timer! Polished gold-colored metal rims (round or square) with raised numerals; red sweep second. AC operation; UL approved; kitten quiet; guaranteed. TWO TYPES: W26 — "on" only; W31 — "on" or "off" — sleep switch enables independent shut-off from 0-90 minutes. Both available round or square. Price includes mounting hardware (and matching bezel for round only).

Order No.	Preset Action	Net
W26 Round	"On" only	$5.50
W26 Square	"On" only	5.90
W31 Round	"On" and "off"	6.50
W31 Square	"On" and "off"	6.50
Model 905	Wood Case*	2.50*

*For round models only; has metal back

The RADIO SHACK Corp.

167 WASHINGTON ST., BOSTON, MASS.

WITH PROFOUND REGRET WE REPORT

The untimely passing of

RUSSELL D. VALENTINE

W2GX

FRIEND, ASSOCIATE AND FELLOW AMATEUR

His Key is Forever Silent

W2UOL
ELDICO

Now, therefore, be it

Resolved *that in order to take advantage of the manifest ability of the said David Houghton and of his experience acquired in his capacity as Treasurer of the American Radio Relay League, he, the said David Houghton, is hereby designated and appointed a member of the Executive Committee to serve as such until the convening of the next annual meeting of the Board of Directors.*

RESOLUTION NUMBER 5

Whereas *the Board of Directors has from time to time promulgated rules and orders for its own government, for that of the Communications Department, the headquarters office and other persons and groups coming under its jurisdiction, and*

Whereas *the policies thus established in the form of "standing orders" are to some extent inconsistent, to some extent difficult of interpretation, and are not codified, and*

Whereas *the Board of Directors has this day by various resolutions, Articles of Association, By-Laws and Rules and Regulations codified and enacted the basic provisions for the government of the American Radio Relay League including such of the policies heretofore contained in "standing orders" as are still felt desirable,*

Now, therefore, be it

Resolved *that "The standing orders of the Board of Directors of the American Radio Relay League, Incorporated, revised to June 1, 1949," as summarized in the ten mimeograph pages mentioned in Secretary's Letter No. 809 of June 21, 1949, be and they hereby are repealed.*

The yeas and nays being ordered, the question was decided in the affirmative: Whole number of votes cast, 16; necessary for adoption, 14; yeas, 16; nays, 0. Every Director voted in the affirmative except the President and Vice-President, who abstained as required. So the resolutions were ADOPTED.

69) On motion of Mr. Dosland, unanimously VOTED that in the event it is necessary to take any affirmative steps to put resolution #1 to #3, inclusive and #5 into operation, any reference to new By-Laws contained in those resolutions shall be deemed suspended until such time as the Board shall have had an opportunity to revise the present By-Laws; and, further, that insofar as they are not inconsistent with the charter today adopted the present Constitution and By-Laws shall for the time being remain in full force and effect.

70) On motion of Mr. Dosland, VOTED to refer to the Constitution Revision Committee for further study its proposals for amended By-Laws, for Rules and Regulations Concerning Affiliated Societies, for Rules and Regulations Concerning ARRL Conventions, and for Rules and Regulations of the Communications Department.

71) On motion of Mr. Canfield, unanimously VOTED that during the period between January 1, 1952 and the 1952 meeting of the Board, the Secretary be authorized to pay usual necessary operating expenses, and expenses against usual authorizations, in no greater amount than one third of 1951 authorized appropriations.

72) Turning now to the recommendations in the report of the Publications and Membership Committee: Moved, by Mr. Middelton, that the ARRL Secretary and Headquarters staff be instructed to immediately organize and conduct a new members drive and contest with suitable equipment prizes for both club and individual contest winners. Such equipment prizes to be purchased from manufacturers using a fund of ($——) expressly authorized for this purpose by this motion. On motion of Mr. Griggs, VOTED to amend the motion by striking out the text and substituting therefore the following: That the Board of Directors direct the Secretary to undertake an intensive campaign for increased League membership at once; Mr. Middelton requested that he be recorded as voting opposed. The question then being on the motion as amended, the same was unanimously ADOPTED. During the course of the above action, the Board was in recess from 8:20 P.M. to 8:28 P.M.

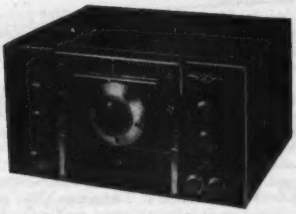
73) On motion of Mr. Middelton, unanimously VOTED that the following radio clubs whose applications for affiliation all meet both 51% requirements of the Board and which clubs' applications have been formally endorsed by the appropriate Division Director, be now affiliated with the American Radio Relay League:

North Peninsula Electronics Club . . . S. San Francisco, Calif.
Eglin Amateur Radio Society . . . . . Eglin AFB, Florida

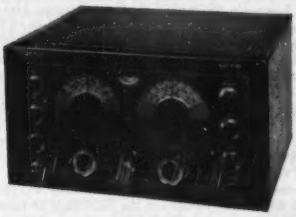
(*Continued on page 96*)

Bob Henry Saves You Money!

Phenomenal trade-in allowances!



National HRO-50-1—employs 3 stages of i.f. and 12 permeability-tuned i.f. circuits (4 per stage), in addition to the crystal filter. Plus all the features of the world-famous HRO-50. **ONLY $383.50**



National NC-183—a new improved model better than ever. From 2-stage r.f. to push-pull high fidelity audio output, the NC-183 incorporates every wanted feature of a fine receiver. Tunes .54 to 31 Mcs. continuous plus 48 to 56 Mcs. Uses 16 tubes.
ONLY $279.00

In Exchange for One of the New

National
QUALITY NC **RECEIVERS**

HENRY offers you out of this world trade-in allowances on your used communication equipment in exchange for one of the new National Quality Receivers. Plus such advantages as quicker delivery, easier terms, more generous trade-ins, a 10-day free trial and 90-day free service. Write, wire, phone or visit either store today!

National NC-125—a moderately-priced receiver covering 550 kcs. to 36 Mcs. in 4 bands. Separate r.f. and audio gain controls. Volt. reg., stabilized oscillator. **ONLY $149.50**

TRADE-IN-USED EQUIPMENT TODAY AT BOB HENRY'S!

Butler 1, Missouri
Phone: 395

HENRY RADIO STORES

11240 Olympic Blvd
LOS ANGELES 25
BRadshaw 2-2917

"WORLD'S LARGEST DISTRIBUTORS OF SHORT WAVE RECEIVERS"

Anchorage Amateur Radio Club.....Anchorage, Alaska
Lima Area Amateur Radio Club.....Lima, Ohio
Aeronautical Center Amateur Radio Club
Oklahoma City, Okla.
Tri-City Amateur Radio Club.....Dunbar, W. Va.
The Lamesa Amateur Radio Club.....Lamesa, Texas
South Plains Amateur Radio Club, Inc.....Lubbock, Texas
Tri-City Radio Council.....New London, Conn.
The Fifty Club of California, Inc.....Los Angeles, Calif.

74) On motion of Mr. Middelton, after discussion, unanimously VOTED that the Secretary and the Headquarters staff be instructed to organize and to carry out a genuine and intensive program to promote both the Novice and Technician Class of licensee; and on further motion of Mr. Middelton, VOTED, 10 votes in favor to 5 opposed, to provide this program with adequate and comprehensive enthusiasm together with full coverage in *QST*, and that the program be augmented by an especially prepared booklet outlining the full story of ham radio from a hobby standpoint, as viewed from the Novice standpoint, said booklet to be prepared for wide distribution to all types of youth organizations, veterans groups, schools, and wherever such material would in any way stimulate the growth of the Novice movement.

75) Moved, by Mr. Middelton, that the ARRL Secretary be instructed to immediately seek a revision of the Novice frequency assignment in order to secure for the Novice their full 50 kc. without interference from U.S.A. or Canadian amateur 'phone signals; but after discussion and consideration, unanimous consent being given, Mr. Middelton withdrew the motion.

76) Moved, by Mr. Griggs, that the Board instruct the Secretary to establish a new and elaborated method of processing renewals of membership at once; but, after discussion, the motion was rejected.

77) On motion of Mr. Griggs, after discussion, unanimously VOTED that it is the sense of this Board that the recommendations as to procedures contained in the Publications and Membership Committee Report be generally utilized as a guide in the membership campaign by the Secretary of the League.

78) Moved, by Mr. Griggs, that full membership privileges be granted the holders of Technician Class licenses; but, after discussion, it being apparent that such privileges are already provided for, and unanimous consent being given, Mr. Griggs withdrew his motion.

79) On motion of Mr. Griggs, unanimously VOTED that the Board authorizes the continuance of the Publications and Membership Committee as an advisory body for one year for the purpose of establishing and maintaining liaison with the League's Secretary and the Headquarters staff during the period of the membership campaign.

80) Moved, by Mr. Griggs, that the Board does hereby instruct the Secretary to request of the Federal Communications Commission a change in rules permitting portable operations for periods of six months instead of the present four months upon the usual proper notification to the nearest FCC Regional office of the area in which operation is planned; but, after discussion, the motion was rejected. Messrs. Griggs and Middelton requested that they be recorded as voting in favor of the motion.

81) On motion of Mr. Griggs, unanimously VOTED that the Board does hereby instruct the Secretary to investigate ways, means, costs and desirability of providing elective officers of the League with accident insurance paid by the League. Such insurance to be applicable only in those instances where such officers are traveling on missions in behalf of the League.

82) On motion of Mr. Hill, unanimously VOTED that the Board hereby expresses its deep appreciation for the services being performed in the name of amateur radio and the League by the Section Emergency Coördinators, Emergency Coördinators, and members of Emergency Radio Nets.

83) On motion of Mr. Keyes, unanimously VOTED that, pursuant to the terms of the Trust Agreement under the Pension Plan, the following persons are appointed to serve as a Pension Committee from this date until the next annual meeting of the Board: Arthur L. Budlong, George Grammer, David H. Houghton.

84) On motion of Mr. Johnston, the following resolution was unanimously ADOPTED: Whereas, the district managers of the ARRL QSL Bureau system have continued to

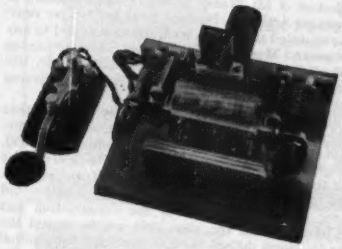
(*Continued on page 98*)

Ham's Paradise!

OLDTIMER OR NOVICE

ONE OF AMERICA'S GREAT RADIO STORES

COMPLETE NOVICE 80 MTR TRANSMITTING STATION KIT



1-TRANSMITTER KIT (as described in May QST) $15.95

2-POWER SUPPLY KIT (for above) (see June QST) ... 9.95

3-ANTENNA KIT (80 MTRS) 2.95

$28.85

NIAGARA'S SUMMER SPECIAL PRICE

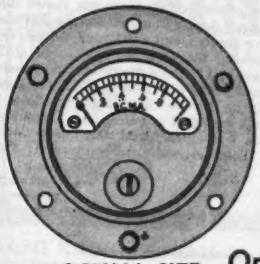
ALL THREE KITS $25.95

All kits are available separately at prices indicated beside each kit. Complete instructions with each kit.

HEART OF THE BC-221 FREQUENCY METER

The VFO sub-assembly, used in BC-221. Fully wired and mounted on sturdy aluminum sub-chassis ready to install. Brand new—original packing—Very Special.. $4.49

New Shipment · New Low Price



0-1 D.C. MILLIAMETER

Perfect for Mobile. Requires 1" Hole. Flange mounting. Completely enclosed, satin aluminum finish.

WHILE THEY LAST

ACTUAL SIZE

Only $4.74

Flash! Flash! Flash!

Just Received—Leece-Neville Mobile Alternator System

Complete with Alternator, Regulator, and Stock

60 Amps. at 6 Volts D.C. LIMITED QUANTITY $49.95

Used — Removed from Police Cars

Circuit Diagram and Instructions Included

ONLY NIAGARA HAS HALLDORSON VACUUM SEALED TRANSFORMERS *(in lower NYC)*

600-500-0-500-600, 250 ma., 117v Pri. $8.34

1500-1250-0-1250-1500, 300 ma., 117v Pri. $42.84

5.0 V.C.T. 2000v ins., 10 amp., 117v Pri. $4.29

6.3 V.C.T. 2000v ins., 6 amp., 117v Pri. $4.14

10. V.C.T. 7500v ins., 12 amp., 117v Pri. $14.52

12.6 V.C.T. 2000v ins., 3 amp., 117v Pri. $3.99

8 henries 2000 v ins., 50 ma., 300 DC. Res. $1.29

8 henries 2000v ins., 130 ma., 100 DC Res. $3.78

8 henries 5000v ins., 400 ma., 60 DC Res. $11.49

5-15 henries 5000v ins., 350 ma., 100 DC Res. $7.20

FOR THE AUDIO "BUG"

WEBSTER-CHICAGO

3 Speed Automatic Record Changer • Brand New • In original sealed cartons • At a fantastically low price • Very latest type model 100-16 • Worth $46.00.

WHILE THEY LAST $24.84

Niagara Radio Supply Corp.

Phone Digby 9-1132-3-4

DEPT. Q71 160 Greenwich Street, New York 6, N. Y.

NIAGARA'S GUARANTEE OF SATISFACTION

All items ordered must meet with full approval or your money back

serve their fellow amateurs faithfully, giving voluntarily of many hours of their time in the interests of amateur radio, BE IT RESOLVED, that the Board expresses its deep appreciation for their excellent work, that this action be reported in *QST*, and that a letter expressing the thanks of the Board be sent by the Secretary to each QSL Manager.

85) At this point, at 10:13 P.M., upon request of the Board, the Chair directed that all Headquarters staff personnel retire from the meeting; at 10:38 P.M., at the request of the Board, the Chair requested that they rejoin the meeting.

86) On motion of Mr. Johnston a rising vote of appreciation was extended to President George W. Bailey on the occasion of his completion of twenty years of service on the ARRL Board of Directors. [Applause]

87) On motion of Mr. Noble, VOTED that the salary of General Manager Arthur L. Budlong be raised ten per cent; Mr. Brabb requested that he be recorded as opposed to any salary increase and Messrs. Middelton and Griggs requested they be recorded as voting opposed to the motion; Mr. Hill requested that he be recorded as voting in favor and wishing that the increase could have been greater.

88) On motion of Mr. Noble, unanimously VOTED that the Secretary be and hereby is instructed to restore to surplus the unexpended remainder, as of December 31, 1950, of the appropriations made by the Board at its 1950 regular meeting for the expenses of the Constitution Revision Committee; and that the Secretary be and hereby is instructed to reimburse and pay expenses of the Constitution and Revision Committee for the year 1951 not to exceed the sum of two thousand dollars ($2,000) and that such actual expenses shall be a charge against net operating income for 1951.

89) At this point General Manager Budlong briefly expressed his thanks to the Board. [Applause]

90) With the permission of the Chair, Mr. Roberts read a telegram from the Chairman of the National Convention Committee inviting Directors to attend the National Convention to be held in Seattle this summer.

91) Moved, by Mr. Johnston, that the next regular meeting of the Board be held in San Diego, Calif., on February 22, 1952; but, after discussion, on motion of Mr. Martin, VOTED to lay the matter on the table.

92) Whereupon, on motion of Mr. Reid, the Board adjourned *sine die* at 11:06 P.M.

93) (In the course of its deliberations the Board also discussed, without formal action, the forthcoming Extraordinary Administrative Radio Conference, civil defense frequencies and regulations, the editorial content of *QST*, analysis of membership and licensed amateur trends, membership solicitation methods of newly-licensed amateurs and a special membership for Novice Class amateurs. Time in session, as a Board: 14 hours, 34 minutes. As a Committee of the Whole: 5 hours, 6 minutes. Total time in session: 19 hours, 40 minutes. Total expenditures authorized: $24,842.50.)

A. L. BUDLONG
Secretary

U. S. N. R.

(*Continued from page 37*)

up duties at Eleventh Naval District Headquarters, San Diego. . . . Cmdr. Stephen J. Hopkins (W4LCW), formerly of Fifth Naval District Headquarters, Norfolk, becomes Naval Reserve inspector-instructor at Reading, Penn. . . . Lieut. Cmdr. F. K. Knight (W4BIH) reports to Sixth Naval District Headquarters, Charleston, S. C. He was former commanding officer of Electronics Platoon 6-11, Eagle Lake, Fla. . . . Cmdr. J. M. McCoy (W5OM) and Lieut. Cmdr. J. J. Zammit (W5HKP) leave Eighth Naval District Headquarters, New Orleans, while Cmdr. T. C. Pipes (W5PLQ) reports to that office. Cmdr. McCoy is assigned to Twelfth Naval District Headquarters, San Francisco. Lieut. Cmdr. Zammit is transferred to duty overseas. Cmdr. Pipes returns to active military service from Monroe, La., where he commanded Organized Electronics Company 8-19. . . . Cmdr. G. L. Tucker (W9HF) leaves Ninth District Headquarters, Great Lakes, for overseas duty.

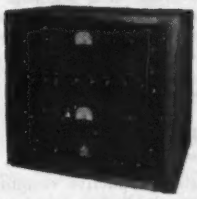
HAMS THE WORLD OVER PRAISE WRL GLOBE KING XMTRS.

Leo I. Meyerson
WØGFQ

NEW WRL 400-A GLOBE KING TRANSMITTER

HIGH POWER—MORE WATTS PER DOLLAR
Our newest model with increased power—400 watts Phone, 425 watts CW. Incorporates some of the latest TVI protective features. Efficient performance on all bands — 10 to 160 on phone and CW. Provisions for ECO. Complete with tubes, meters, and one set of coils. Low Down Payments.

KIT FORM **$439.45** WIRED-TESTED **$459.45**



WRL 150 WATT GLOBE CHAMPION TRANSMITTER

MORE WATTS PER DOLLAR
R.F. Section a complete 150 watt XMTR. Provisions for ECO. Automatic fixed bias on Final and Buffer. Class B Speech Modulator. 150 watt input — 10 thru 160 meter bands. Complete with tubes, meters. Low Down Payments.

KIT FORM **$279.00** WIRED **$299.00**

FREE
1951 WRL CATALOG

NEW LOG BOOK

For mobile or fixed station. Spiral binding—turns up—lies flat. Full column log listing all FCC required info. Log will accommodate 1,525 stations. Front and back covers show "Q" signals, phonetic alphabet, and amateur international prefixes. **25¢**

Pictured above, in their shack, are Mr. and Mrs. R. J. Matthias, W5BIW, and W5DRA, of State College, N. M. Here's what they say about their Globe King:

June 1, 1951

World Radio Laboratories
Council Bluffs, Ia.,

Dear Leo:

Writing as a satisfied and proud owner of the Globe King transmitter, I would like to say that I feel that you and World Radio Laboratories, by development and production of the Globe King, are offering amateurs a real service. The price is very reasonable considering that you use only the best components. I like the compactness and neat appearance, but most of all I like the dependability of the Globe King. The good signal reports I am constantly receiving make it an additional pleasure to be a Globe King owner.

Sincerely Yours,
R. J. Matthias, W5BIW

LOW DOWN PAYMENTS
NAME YOUR TERMS
PERSONALIZED SERVICE

Let me know what you have to trade, any make or model. I'll allow you more for your present equipment. WRL buys more equipment . . . WRL sells more equipment. Our large volume of sales means faster turnover, greater savings for you! We finance our own paper . . . no red tape! Get guaranteed satisfaction from the "World's Most Personalized Radio Supply House."

GIANT RADIO REFERENCE MAPS

Just right for your control room walls. Approximately 28" x36". Contains time zones, amateur zones, monitoring stations. Mail coupon today and ..... **25¢**

CU ON 20 - 10 & 75 METERS

WRL 10 METER BEAM

Plumber's delight 3 element beam quickly assembled; furnished with Gamma match. Extremely light; all aluminum construction; grounded antenna; very low priced. Furnished less mast and lead. Full instructions furnished.

Narrow spaced $15.95
Wide spaced $17.95

GUARANTEED CRYSTALS

IN HOLDERS Type FT-243
160 METER
1.8 to 1.825 1.875 to 1.9
1.9 to 1.925 1.925 to 2.0
$1.25 ea.
80-40 METER
3.5 to 4.0 7.0 to 7.4
95c ea.

Please state frequency. We will come as close as possible. No refunds or exchanges please.

Write for detailed XMTR specification sheets.

WRITE - WIRE PHONE 7795

World LABORATORIES Radio INCORPORATED
EVERYTHING IN RADIO
COUNCIL BLUFFS IOWA

World Radio Laboratories, Inc.
746 West Broadway
Council Bluffs, Iowa 47

Please send me:
- ☐ Radio Map
- ☐ New Catalog
- ☐ List of Guaranteed Used Equipment
- ☐ Globe King Info
- ☐ Globe Champion Info
- ☐ Log

Name_____
Address_____
City_____ State_____

V.H.F. Converter

(Continued from page 36)

any commercial bandswitching converter we've seen, and it gives more frequency coverage. It has been thoroughly tested, both in the ARRL lab and in actual on-the-air operation in the writer's station. Just as it stands, it does a creditable job on all bands, 220 through 28 Mc. If one desires the best reception that is possible by amateur techniques, a low-noise preamplifier may be used for the frequencies where such performance is required. Lab readings given below will give the prospective user an idea of what can be expected in the way of performance. With the a.v.c. off, a 30-per cent modulated signal gave a 10-db. signal-to-noise ratio with the following input levels: 29 Mc. — 0.35 microvolt, 51 Mc. — 0.3 microvolt, 146 Mc. — 2.0 microvolts, 220 Mc. — 2.2 microvolts. These figures compare favorably to those obtained with all but the best v.h.f. converter designs.

Particularly for coverage of a segment of a band, as in civil defense work, the operation of the converter is more than adequate. For the money it cost, it is the year's outstanding bargain!

Laying Out a Transmitter

(Continued from page 40)

worry about inadvertent inductive coupling — most of it will be through the link line between L_2 and L_4.

Finally, we keep checking back and forth between the two designs of Figs. 4 and 5, to see if we can find any points of superiority or inferiority that we have overlooked. Do we have room for the fixed condensers, resistors and r.f. chokes? We check this by laying out the parts as they will be mounted, and lay in the smaller components. We find that this won't be any problem in this case. However, we never neglect to check because we know that this is where many designs go haywire — the big components are located and then the smaller ones are crowded in haphazardly, messing up the wiring and making the unit resemble some cousin to a rat's nest, once removed. In the Fig. 5 design, we check the clearance between the crystal sockets and the meter, so that we don't get caught with an arrangement that won't let us plug in the crystals after everything is assembled.

Personally, the writer would settle for the design in Fig. 5, because the electrical design is a little more to his personal preference and the extension shaft for the crystal switch is eliminated, but we have a hunch that as many as not would prefer the design in Fig. 4. In any event, we have demonstrated a few of the considerations that are involved in laying out a piece of gear. The same principles would apply, of course, to a more complicated unit. The higher one goes in frequency, the more critical the design might become, because we would then have to be more careful about lead lengths and capacities. With

(Continued on page 108)

HARRISON HAS IT!

OSCILLOSCOPE SENSATION!

FAMOUS NATIONAL CRU 'SCOPE BELOW MANUFACTURER'S PRICE!

Save over $17.00 from the regular net selling price — Buy this precision 'scope for less than the price of the parts alone!!!

Signal-Conscious Hams will find the CRU 'Scope an invaluable aid in getting the most out of a transmitter, yet insuring clean, distortionless transmissions. Careful modulation monitoring helps reduce BCI and TVI complaints! For many checks, the oscilloscope will give a more accurate indication than is obtainable with regular meters — no phone op should be without one!

- Continuous on-the-air checks of both RF and Audio circuits!
- Visually adjust speech clipping circuits and speech amplifiers!
- Measure Percentage Modulation at all times.
- Check distortion, excitation, overmodulation, parasitics, non-linearity, etc. by the Trapezoidal pattern method.
- Check modulation at the receiver!!!
- Innumerable other uses — indispensable in any ham shack!

The National CRU Oscilloscope was designed to meet the requirements of discriminating amateurs, labs, and electronic experimenters. 2AP1-A CR tube provides ample patterns — Self-contained power supply — Controls for brilliancy and focus — Potentiometer to control amplitude of horizontal deflection — Built-in 60-cycle sweep — 100V DC gives 1" deflection on CR screen — Insulated beam switch control terminals to permit connection to a switch or relay so trace appears only during transmission periods—Provision for rack mounting — Operates on 110V, 60-Cycle AC — Many other desirable features!

Laboratory and Industrial Users

Use several of these versatile instruments for simultaneous observation — production line checking — group alignment — etc. etc. Hundreds of other applications!

Only $24.95

Complete in table cabinet (as illustrated) with all tubes and instruction book, plus 5¼" standard rack panel and additional control plate for horizontal rack mounting. Sealed cartons — full factory guarantee. Total regular net selling price $42.75

Rush Order Today!

MOBILE ANTENNAS? HARRISON HAS THEM ALL!

MASTER MOBILE

Universal Body Mount — Model 132	$8.75
Body Mount with Heavy Duty Spring — Model 132X	9.85
96" Tapered Steel Whip for 10 Meters — 100-96S	5.25
All-Band Antenna with coil for 20, 40 or 75	8.75
Extra coils for above — 20, 40 or 75 — Specify	3.30
New High-Efficiency Coaxial Antenna for 2 Meters. Fits all Master Mounts. 12' Coax Lead. Model 114	9.95

PREMAX

New Universal Ball Mount with Spring — Model 25	$11.76
96" Step-Tapered Stainless Steel Whip — AS-196	3.65
Base-Loaded 3.5 MC Antenna with Coil — BLS-380	7.94
Center-Loaded 3.5 MC Antenna with Coil — BXC-380	9.12

WARD

Roof-Top Antenna for 140 to 160 MC. Install entirely from outside. Includes 12' coax lead. Model SPP-16 — $3.98

Here's the antenna that you've been reading about! Single 55½" whip for 10 or 2 meter mobile. Single hole mount. Fitting for coaxial connector. Full instructions. — $13.50

Write for new Master Mobile and Premax catalogs.

KW AM MODULATOR — $19.95

New Lysco Clampmaster provides efficient clamp type modulation of xmtrs using pentode or tetrode RF amplifiers. Will modulate many rigs up to one KW input when properly adjusted in accordance with simple factory instructions.

- High Impedance Input — Use Xtal or Dynamic microphone.
- Simple Installation — Only four wires to attach and one minor change in power amplifier grid circuit.
- Compact — Streamlined metal cabinet, 4" x 4" x 8" deep.
- On-off switch, gain control and pilot indicator.
- Low Drain — Requires only 300V at 20 MA and filament current. (Power can be taken from transmitter)
- Complete with Tubes — Uses 6J7 1st Speech, 6SN7GT 2nd Speech, and 6V6G Modulator.

Clampmaster 401 — Ready-to-use — $19.95

FREE MONEY?

Well, here's the nearest thing to it! Save $1.00 on each of your next four orders for radio parts or equipment! Send only $1.50 for our mammoth, 1200-page Radio's Buyers Guide Catalog (describes and illustrates the products of every leading electronics manufacturer with prices and trade discounts) PLUS four credit slips, each worth $1.00 on any order totaling $5.00 or more. Your money back if you don't agree that this is the biggest bargain in radio history!

TVI—Suppressed Johnson Viking

Here's America's biggest transmitter value! Harrison has it completely laboratory wired and tested, incorporating TVI-preventive measures. Conservatively rated at 100 watts Phone or 125 watts CW OUTPUT! Push-pull 807 modulators! Covers 160-80-40-20-15-11-10 meters — entirely band switching — oscillator keying for break-in CW — coaxial output — provision for VFO — xtal selector for 10 frequencies — all circuits metered. Everything self-contained in desk cabinet 11" x 15" x 21" wide. Supplied complete with tubes and instruction book — ready to operate.

Johnson Viking I
Wired, tested, complete! **Only $298.50**

Standard Johnson Viking I Kit as supplied by the factory. Complete with instructions, less tubes. $209.50

NEW JOHNSON VIKING VFO KIT

A companion unit for the Viking I Transmitter — can also be used with any similar transmitter. Features accurate frequency calibration on all bands, 10 through 160 meters — High Stability — Cleanest Keying — Assembly so simple that it can be built in one evening. Cabinet finished to match Viking I. Factory advises first deliveries will start in September. Send order now. Literature available.

Complete Kit, less tubes $42.75

NOVICE CLASS HAM-A-LOG

Our new Novice Class Ham-A-Log is now ready! Novice licensee aspirants and beginning amateurs will find it an invaluable aid. Send for your copy now! Club Secretaries and Boys' Group Radio Advisers — How Many Can You Use?

GOING MOBILE?

A postcard will bring you literature describing mobile transmitters, converters, antennas, etc. Lists only equipment available for immediate delivery!

HARRISON
NEW YORK 7, N.Y.
225 GREENWICH STREET
(10 West Broadway, at Barclay St.)

more tuned circuits, and where several stages were operating on the same frequency, we would have to consider shielding and other devices for reducing over-all feed-back.

In the near future we will describe how this or any other "paper" design could be transferred to the chassis and how the chassis would be laid out and worked.

---

50 Mc.

(*Continued from page 48*)

and all of VE3 came back to him. In rapid succession he worked VE3s AET DDO AH AZV AIB AXT BUO BQT DHP ADD BOW and BAD. Then the scene shifted to W8 and 9, bringing in W9s RQM FJB PK and W8s SQU BFQ YFP and RFW, the band closing at 10:40. No, there just isn't anybody on 6! Eddie had a similar experience on April 29th, when his first opening of the season netted him 29 contacts in W1, 2, 3, 4, 8, and VE3.

Or take the case of his fellow townsman, W4PQW. Here's a fellow who really hit the jackpot. Harold got on 6 the first time on May 29th, making a few contacts and getting the

(*Continued on page 104*)

Standings as of May 25th

WØZJB	48	W5VY	47	W9ZHB	48
WØBJV	48	W5GNQ	46	W9QUV	48
WØCJS	48	W5JTI	44	W9HGE	47
W5AJG	48	W5ONS	44	W9PK	47
W9ZHL	48	W5ML	44	W9VZP	47
W9OCA*	48	W5JLY	43	W9ALU	46
W6OB	48	W5JME	43	W9QKM	46
		W5VV	42	W9RQM	45
W1CLS	46	W5FAL	41	W9UIA	45
W1HDQ	46	W5NHD	41	W9UNS	42
W1CGY	45	W5FSC	41		
W1LLL	44	W5HLD	40	WØQIN	47
W1KHL	43	W5HEZ	38	WØDZM	47
W1HMS	43			WØNFM	47
W1LSN	41	W6WNN	48	WØINI	47
W1EIO	40	W6UXN	47	WØTKX	47
		W6IWS	41	WØKYF	44
W2RLV	45	W6OVK	40	WØJOL	44
W2BYM	44	W6TMI	40	WØJHS	43
W2IDZ	43			WØPKD	43
W2AMJ	42	W7HEA	47	WØHVW	42
W2MEU	42	W7ERA	47	WØMVG	41
W2GYV	40	W7BQX	45	WØIPI	41
W2QVH	38	W7DYD	45		
W2FHJ	37	W7JRG	42	VE3ANY	42
		W7BOC	40	VE3AET	32
W3OJU	45	W7JPA	40	VE1QZ	32
W3NKM	41	W7FIV	40	VE1QY	31
W3JVI	38	W7CAM	40	HC2OT	26
		W7KFM	40	XE1GE	19
W4FBH	46	W7ACD	35		
W4EQM	44				
W4QN	42	W8NQD	42		
W4FWH	42	W8YLS	41		
W4MS	40	W8CMS	41		
W4CPZ	30	W8LBH	38		
W4OXC	39	W8RFW	37		
W4BEN	35	W8UZ	37		
W4FNR	35	W8WSE	36		

* Formerly W0NJT.

Calls in **boldface** are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.

fever at once. The following day, his first full day on 6, he worked 17 different stations in 16 states, 8 call areas, and VE3!

Reading, Mass. — Here's one of the strangest 50-Mc. DX reports to come our way in a long time. At 7:45 P.M. on the night of May 4th, W1AWA heard LU8CO on 53.5 Mc.

Good news: Our long-sought consistent v.h.f. activity in the West Indies may yet become an established fact. W5DNN, better known to the 6-meter gang as HC2OT, will soon be off to Havana, Cuba, for an extended stay. Steve will take along gear for both 6 and 2, and will make every effort to see that the potentialities for v.h.f. DX of that part of the world are fully exploited.

Here's another interesting v.h.f. DX possibility: W4RXP and W1PVH are planning a DX-pedition to St. Pierre, to operate as FP8AG and FP8AH, in the middle of August. They would like to try the v.h.f. bands, if possible. Details have not been arranged as yet, but when (and if) it is positive that v.h.f. gear will be taken along announcement will be made in this department, or via ARRL Bulletin on W1AW and OB8 stations.

The World Above 420 Mc.

There is only one thing wrong with promoting activity on 420 Mc. and higher: the fellows who move up to the higher bands always seem to come from 6 or 2, where their efforts are still needed to keep things going at full speed. One of the most recent converts of this sort is none other than W9ZHB, Zearing, Ill., who has long been a mainstay of activity on 6 and 2. Ed has a crystal-controlled rig with an AX-9003 in the final, feeding a 16-element array. With this set-up he is working regularly with W9MBI, Coleta, Ill.; who is similarly equipped.

The two stations are separated by 55 miles. Observation of 2-meter conditions thus far has indicated that 144 and 420 are not necessarily similar. In fact, it has been noted that if 2-meter signals are up the 420-Mc. ones are below normal. The path is worked consistently, but during fog or heavy rain the 420-Mc. signals are extremely weak.

How's DX?

(*Continued from page 51*)

from well-traveled W6SAI . . . . . From W6AM we learn the revised list of So. Calif. DX Club officers to be: W6CUQ, Board Chairman; W6AM, Pres.; W6KPC, V. Pres.; W6ADP, Treas.; W6SYG, DX Ed.; W6AOA, Rec. Secy.; W6BXL, Cor. Secy. and Director . . . . . Your mosquito-bite swellings and poison-ivy patches should be under control by this writing but if you're a glutton you can still get into another Field Day this month. The SSA runs theirs during the first week of July and a special objective of the Hq. station, SM3XA, will be the contacting of W DXers. SM3XA will be out in the rough at Aston near Sundsvall and a 24-hour session on 20, 40 and 80 meters is anticipated. A specially-printed QSL will be available, writes SM3AXM . . . . . CN8EG would like to find out just how sharp W1FH really is. He wants to put a one-watter on the air on 160 meters from some hitherto inactive remote country. (We'll wager Charlie would be copying Steve's receiver oscillator before he set up the rig.) . . . . . The OARL (Okinawa) is holding a heap of cards for former holders of KR6 and J9 calls. These will be forwarded upon receipt of their present addresses and old call signs and this info should be sent to the Okinawa Amateur Radio League, APO 331, % PM, San Francisco, Calif. Correspondent KR6EK has held the calls W7MRX, W9KOE and J2UUU . . . . . CR1ØAA writes to state that his activity ceased as of June, 1950, and he therefore cannot reply to QSLs pertaining to claimed contacts after this date . . . . . VK4PR is nearing 150 confirmed and wants to pass that mark before applying for DXCC. These, by the way, were worked without recourse to beams. Jim's sister, a nurse in Sydney, is hard at work studying for her own license. VK4PR regrets to inform us of the passing of several in the Queensland ham ranks, VK4s AR, ER, RC and WA . . . . . EK1DX/EK1LM writes of the activity of six VOA engineers in the Tangier Zone using a "Community rig" on 20 and 40 meters. The group plans to form a club in the near future. The British boys are also accumulating quite a representation in the Zone as may be ascertained

(*Continued on page 106*)

by inspection of the "Where" section . . . . . W4CYY has nicknamed W1RWS of the DXCC desk "Kefauver" after having his CZ2 entry scratched from his tally. "JB" speaks of a W4 lawn-party shindig in the shade of W4BPD's rhombics . . . . . Phil Bates figures it may interest some to know that VS7LA is now GI3BJL; ex-ZC1CL is GW3HCL; ST2FU/MT2FU, G3BCY; MD1I, G3DVV; ex-ET3Z, G5JR; ex-VS7PF, G8PF; VS2CH, G2CQJ; ex-ZC6BF, G3CBF . . . . . VS9AH returned to the Tight Little Island and left four VS9 buddies to hold the Aden citadel. VS9AA is quite active, VS9AO is rebuilding, while VS9s AC and AF are active but rarely . . . . . W9JVI (ex-VE8MD) is now DL4OM and looks forward to visiting the States this summer . . . . . From HC2JR: "Bud Divine was halfway [to Cocos Island] when his fuel line broke and he lost most of his oil. In addition, he had headwinds which did not allow him any progress, and finally he began to have trouble with the rig. This was the last straw and he headed for the handiest port which happened to be Esmeraldas, Ecuador. From there he has left for Galapagos where he will settle down permanently and operate as HC8GI on ten and twenty 'phone." Thus, bad breaks kept TI9GRC off the air but there are still a few DXers drooling for those HC8 QSOs about to come off! . . . . . Notes from the So. Calif. DX Club's *Bulletin*: ZK2AA will leave Niue for a Stateside visit after a stop in New Zealand. A Chilean amateur is rumored to be heading for some Easter Island activity . . . . . The No. Calif. DX Club's *DXer* lists six members over the 200-confirmed mark (W6s AM DZZ MEK MVQ and MX) and eight constituents hold 'phone DXCC memberships (W6s AM AED IKQ ITH NIG TT UYX and UZX). A total of *41* fellows in the club have accomplished DXCC. The line voltage out there must be up 15 volts when this outfit is in assembly!

—•••—

Jeeves considered himself quite sharp on Field Day this year. He refused to bite on the wire-stretcher gag, turned up his nose at the suggested emptying of grid-leak pans and ignored our "CQ DX DE IM4U" sent with the freqmeter. But we really got a rise from him with a three-toned auto horn placed under his chair and hooked to his sideswiper.

Hints & Kinks

(*Continued from page 58*)

An alternate arrangement that permits the form to be mounted from the adjustment end is also shown. A little "research" through the junk box will probably bring to light a supply of this type of threaded insert. Otherwise, the form must be mounted from the bottom, as shown in the sketch. — *Lawrence F. Caccomo, WØNMN*

Correspondence

(*Continued from page 53*)

amination which is required at the present. If I don't make it, I will go ahead and take the Novice license examination, because I really want to become a ham in the worst way.

— *Bill Bidwell*

[EDITOR'S NOTE: See the article entitled "How To Pass the Novice Examination," page 42, June *QST*.]

QTH?

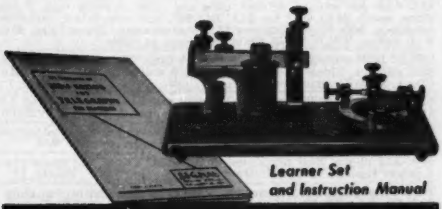
1716 Monte Vista Ave., Ft. Myers, Fla.

Editor, *QST*:

Have you ever looked over the 'phone bands to see if the skip were right for a certain state, to deliver an important message or to work that last state for your WAS? Well, if you have, you have found the fellow who calls CQ for five minutes before signing his call and then he doesn't give his location.

Please, fellows, give your city and state along with your call.

— *Louis E. Persons, W4PJG*



Learner Set and Instruction Manual

Learn Telegraphy & Wireless the EASY *Signal* Way!

It's fun! And, you can learn keying fundamentals and codes quickly and easily with Signal's new booklet — "Radio Keying and Telegraphy for Beginners."

Signal's professional-type practice keys and two-way learner sets are also available at student prices. Mail 15c (stamps or coin) today for your instruction manual and equipment catalog.

Signal ELECTRIC MANUFACTURING CO.
MENOMINEE, MICHIGAN

MORE SIGNALS PER DOLLAR From Money Invested in an Antenna

Self Supporting
STEEL TOWERS
For Rotary Beams, FM, TV

Width at Base Equal to 1/3 Height

ATTRACTIVE—*NO GUY WIRES!*

- 4-Post Construction for Greater Strength!
- Galvanized Steel—Will Last a Lifetime!
- SAFE—Ladder to Top Platform
- COMPLETE—Ready to Assemble
- Easy to Erect or Move
- Withstands Heaviest Winds

EASY MONTHLY PAYMENTS
Up to 12 Months to pay

CIVIL DEFENSE DIRECTORS:
A Vesto Tower provides an ideal support for your air raid warning siren. Write for full details.

Vesto Towers are available in a wide range of sizes to meet requirements of amateurs and commercial users alike. Note the low prices for these quality lifetime towers: 22'-$94.75, 28'-$115.75, 33'-$135.75, 39'-$157.75, 44'-$178.75, 50'-$217.75, 61'-$279.75, 100'-$1060.00. Towers are shipped to your home knocked down, FOB Kansas City, Mo. 4th class freight. Prices subject to change . . . so order now! Send check or money order . . . or write for free information.

WRITE TODAY FOR COMPLETE FREE INFORMATION AND PHOTOGRAPHS

The VESTO Company
Parkville, Mo.

Electronics Training for Profitable Careers!

Civilian demands growing! CREI Home Study qualifies you for better paying jobs in essential industry or the Armed Forces

"Technicians may soon be as scare as certain tubes," says an informed industry spokesman as growing military demands cut sharply into available skilled personnel. *Now is certainly the time to get into electronics!* In this essential industry you're assured—if qualified—of a lifetime career. And if you're headed for the Armed Services, your technical electronics ability will set you apart from the crowd—put you in line for supervisory work at extra pay in vital radar, navigation, or communications units.

CREI's practical home study training is recognized by industry and the military as outstanding. It starts with basic principles and goes step-by-step through advanced TV, communications, and industrial techniques. For detailed proof, send for booklet. It can lead to promotion, more money, and a lifetime career. Act now!

MAIL COUPON FOR FREE CATALOG

CAPITOL RADIO ENGINEERING INSTITUTE
Dept. 167C, 16th & Park Rd., N.W., Wash. 10, D. C.
Send booklet "Your Future in the New World of Electronics" and course outline.

CHECK FIELD OF GREATEST INTEREST
- ☐ TV, FM & Advanced AM Servicing
- ☐ Practical Television Engineering
- ☐ Broadcast Radio Engineering (AM, FM, TV)
- ☐ Practical Radio Engineering
- ☐ Aeronautical Radio Engineering
- ☐ Radio-Electronics in Industry

Name.....
Street.....
City.....Zone.....State.....

If residence school in Wash., D. C. preferred, check here ☐

Directional UHF TV Relay Antenna between studios and Xmtr. manned by skilled technicians.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. No cash or contact discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 25th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League take the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested signature and address be printed plainly.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 719 World Bldg., New York City.

QSLS, 100, $1.75 up. Stamp for samples. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore 29, Md.

CONVENTION! ARRL National Convention in Seattle July 27, 28, 29th, 1951. Plan your vacation in the great Northwest during Seattle Centennial year. The time of your life! General Chairman: W7RT, 1921 Atlantic St., Seattle 44, Wash.

WANTED: Marconi coherer magnetic detector. Multiple tuner; deForest responder and other gear prior to 1920. Franklin Wingard, Rock Island, Ill.

MOTOROLA used communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

SUBSCRIPTIONS, Radio publications a specialty. Earl Mead, Huntley, Montana, W7LCM.

CRYSTALS: Bassett precision Type 100A (FT-243) within 80, 40, 20 meter bands or MARS channels at $1.50 each. Specify exact frequency and include postage. Rex Bassett, Inc., Bassett Building, Fort Lauderdale, Florida.

WANTED: Teletype 1/40TH HP synchronous motor. W6ITH, Moraga, Calif.

QSL'S-SWL'S Meade. WØKXL, 1507 Central Avenue, Kansas City, Kansas.

PHONE patch schematics, practical discussion. $1.00. Nichols, W1MRK.

QSLS. Samples. Noble Press, Chatham, Mass.

WANTED: Your surplus radio receivers, transmitters, ARC-1, ARC-3, ART-13. We buy anything. What have you? Tom Allen, 562 Atlantic Ave., Brooklyn 17, N. Y.

QSLS: Uncle Fred QSLs. Three color QSLs and up. Rainbow Map QSLs. DX QSLs. Bargain QSLs. Samples rushed, 10¢. Uncle Fred, Box 86, Lynn, Penna.

BEAMS and antenna elements. Send card for information. Riverside Tool Co., Box 87, Riverside, Ill.

BARGAINS: New and reconditioned Collins, National, Hallicrafters, Hammarlund, RME, Millen, Gonset, others. Reconditioned SW54, $39; S40A, $69; SX42, $199; NC57, $69; NC173, $149; NC183, $199; HR07, $199; HRO50, $289; HQ-129X, $139; SP4OOX, $259; RME45, $89; DB22A, $49; HF-10-20, $49; VHF152A, $59; HT18, SX28A, SX25, SX43, Collins 75A, and 32V, others. Terms. Shipped on approval. List free. Henry Radio, Butler, Mo.

QSLS! Taprint, Little Rock, Mississippi.

GOING to try for your Amateur radio operator's license? Check yourself with a written test similar to those used by the FCC. Surecheck Tests, Novice Class, $1.50; Class B & C, $1.75; Class A, $2.00. Answer key is included. Amateur Radio Supply, 1013 7th Ave., Worthington, Minnesota.

WANTED: Radio officers for Merchant Marine, $400 per month. Should have FCC tel. Lic. and Coast Guard officers lic. and 6 mos. experience. Write Radio Officers Union AFL, 1440 Broadway, New York 18, N. Y.

QSLS, SWLS. High quality. Reasonable prices. Samples. Bob Techout, W1FSV, 40 Elm Street, Rutland, Vt.

FOR Sale or trade: 10" circular saw, 24" jig saw, belt and disc sander, Busch Pressman, 2¼ x 3¼, Flash gun, G-E light meter, Gadget Bag, etc. Want: RME VHF-152, VFO 10 meter beam, rcvr and transmitter. W3RIZ, 2721 Lardner St., Phila. 24, Penna.

FOR Sale: Bargain: 300 watt c.w. transmitter 6AG7 xtal, 807 PP 812, dual pwr supply, 20 mtr. coils and xtals, in relay rack. Parts alone worth $150. Sell for $75. BC348L rcvr converted, excellent condition, $60. New Vibroplex $15. Bud cabinet 17½ x 19 in. $10. F. J. Geller, W8QGU, W. State St., Fremont, Ohio.

SELL: Half-kilowatt final using 4–250A tube. Three power supplies. Bud cabinet. Shielded wiring. $135. No shipping. K6CL. D. McClung, 5208 Electric Ave., La Jolla, Calif.

SELL: BC-348P (Stromberg-Carlson) purchased new. Wired for 115V. A.C. Additional audio stage "S" meter. $75. F.o.b. W2NIV.

SELL: RAK-7 longwave receiver with power supply, instruction books, cables. Practically new. $50. W9AZA, Burlington, Wis.

KW-AM phone. Best parts push-pull 250TH's final, 805 modulators 5 power supplies. $375. R. Meyer, RR #1, Sutliff Rd., Peoria, Ill.

FOR Sale: BC221-N, in excellent condx. w/xtal, charts, pwr supp., $75. Want: ART-13 and Gonset 3-30. A. Brocato, 1217 N 33rd St., Birmingham, Ala.

ATTENTION: All Morse Telegraphers! Real collector's item: 12" standard 2-side phonograph record of news being sent, up to 60 wpm, over the last full-time newspaper leased wire, it is believed, in the country. Stories recorded in actual transmission from The New York Times Washington Bureau to the New York office by some of the few skilled newspaper Morse telegraphers still in service. Typed copies of stories as received in New York furnished for checking use of newspaper (Phillips) code. Price $2.50. R. S. Cahall, 711 Albee Bldg., Washington 5, D. C.

WANTED: APR-4 receiver and tuning units. State condition and price. W2DB, 274 Boulevard, Scarsdale, N. Y.

QSLS. Samples free. Wunder, W2TDV. 135–21 Francis Lewis Blvd., Rosedale 10, N. Y.

WANTED: Hallicrafters HT-19 transmitter in good condition. J. Thompson, Morrisburg, Ont., Canada. VE3BJT.

FOR Sale: SP4OOX, complete, with power supply. Excellent condx. W6FUV, 217 Millwood Drive, Millbrae, Calif.

WANTED: Collins 70-E8 PTO. Ralph Barrett, W2PCO, 2970 Lawrence Dr., Wantagh, N. Y.

WANTED: 32V2. Cash. W2EVG.

SELL aluminum panel, chassis and bracket sets. Panels 8¼ x 19 in. Chassis 6 x 16 x 1½ in. All ¼" thick. Perfect for emergency & portable equipment. No holes in any pieces. Shipped postpaid for $2.50 per set. Larry Pearsall, W9FDY, 382 Callender Ave., Peoria 2, Ill.

866A kit, 2 tubes, sockets and 2.5VCT/10 amp. transformer, $6.98. 1N34 crystal, 79¢. Sell "TAB" your surplus tubes and gear. Send List, best price. "TAB", 109 Liberty St., New York City.

QSLS for stamp. Harrison, 8001 Piney Branch Road, Silver Spring, Md.

10 METER mobile: Motorola T-69 20A transmitter, tubes, power supply, mic, 15 control cable, push-to-talk, and schematic. Ship C.o.d. $45. Sam J. Rhoades, W5RVX, 3336 S. Marion, Tulsa, Okla.

QSLS, SWLS. C. Fritz, 1213 Briargate, Joliet, Ill.

SELL BC-610 sub assemblies, all new. Modulator deck, exciter deck, BC-614E speech amplifier. Complete set 14 tank coils. Plug-in exciter units. Make offer F.o.b. W2RTM, 443 Saratoga Rd., Scotia 2, N. Y.

SELL BC-348-P A-1 condx. A.C. converted, separate r.f. gain, $50. Micamold XTR-1 xmitter, $12. Complete. Carmen Moretti, W2AIH.

WORLD Time chart. Indicates correct time around the world. 50¢ postpaid. Long, 104 East 14th St., Kansas City, Mo.

WANTED: March and May 1916 *QST's*. 200 copies for sale 1920 to 1951 at 25¢. WØMCX, 1022 N. Rock Hill Rd., Rock Hill 19, Mo.

SELL: BC-610E, excellent condition. Best cash offer. W1WL, 226 Chestnut St., Northampton, Mass.

FOR Sale or swap: 1 like-new Webster wire recorder, Model 80. Cost $149.50 net. 1 Webster wire mechanism Model 79, cost $59.92 net. Make offer on anything you have. Donald R. Clark, 105 No. W. Main, Blackfoot, Idaho.

BRAND new equipment in original cartons. 24V.A.C., transformer $2; BC-453, $10; two 645 A's, each $12; Carter Dynamotor complete unit, filters choke, 6 volts DC input, 350 V. DC at 150 mils, $35. WØCVU, P.O. Box 224, Cedar Rapids, Iowa.

HALLICRAFTERS S-40A. Good condition. Will trade for Argus C3 or Kodak 35. Bruce Hannah, W5ACC, Junction, Texas.

FOR Sale: Collins 30K transmitter packed for export, $1200. H. Sherwood, Federal Telecommunications Laboratories, Nutley 10, N. J.

WANTED: Collins Wireless Telegraphy, Morgan's Wireless Telegraphy & Telephony; Wireless Specialty apparatus; Marconi tuners 101–106–112; multiple Universal — Electro Importing Co. apparatus; year books of Wireless Telegraphy 1914, 1915, 1916; Wireless Age, Modern Electrics, Electrical Experimenters. Sell QST's 1919–1939. L. Rizoli, W1AAT, 100 Bay View Ave., Salem, Mass.

SELL: W4DWF transmitter described June and July CQ. Guaranteed perfect working condition with all tubes, coils, mike, spare set tubes. Will deliver in person to your nearest airport not over 800 miles from Washington, D. C. First $395. Also 7EP4, $5; 7JP4, $7. Pair 100THs, $10. Prop pitch motor, in sealed container, instructions, $10. W4DWF, 911 26th Place So., Arlington, Va.

FOR Sale: Collins 32V2, Collins 75A1 receiver; Johnson rotator and direction-finder, external ant. coupler, Micro-Match coupler, low pass C-1 filter, mikes, etc. Sell to best bidder over $650 which is half of original cost. Perfect condition. Less one year old. W2MWV.

FOR Sale: HRO-5TA1 complete with built-in dual conversion. Looks and works like factory job. Photo on request. WØBFB, Dysart, Ia.

WANTED: Original schematic and conversion data for R4/ARR-2 REC. W8UUC, 135 E. Delaware Ave., Toledo 8, Ohio.

NEW crystals for all commercial services at economical prices; also regrinding or replacement crystals for Broadcast, Motorola, Link, G-E, and other commercial types. Over fifteen years of satisfaction and fast service! Edison Electronic Co., Phone 3901, Temple, Texas.

SALE or trade for 1951 Fluid Drive sedan: Over $2500 worth of ham gear. One lot only, send for list. Highest bidder. W2CJZ, 90 Blvd., Bayonne, N. J.

EVANS accepts used manufactured equipment in trade for new. Write for quotations or latest list of used equipment. W1BFT, Evans, Evans Radio, Box 312, Concord, N. H.

S2OR, $49; S40-A, $65; Patterson PR15, $80; HQ-129X w/apkr, $129; SX-28, $135; Hickok 288X, $119; 277X, $105. Others. 'Scope alignment. "New" appearance. We also buy receivers. Electronic Labs, Box 1821, Lincoln, Nebraska.

ATTRACTIVE labels. Four lines, call letters. Gummed. Perforated and rolled. 500, $1.00; 1000, $1.50. W2TPQ, Litzenberger, 810 Post, Rochester, N. Y.

SELL: VFO's: Millen 90700, 40 and 20 meters, $28; Millen 90711, all bands, $98. Like new. Sgt. Sackett, 1901st AACS, Travis AFB, Calif.

10 and 20-meter beams, $23.25 up. Aluminum tubing, etc. Willard Radcliff, 1720 No. Countyline St., Fostoria, Ohio.

FOR Sale: HQ-129X with speaker, NFM, Adapter, $115. W1ASJ, 22 Cobbs Road, West Hartford, Conn.

TRADE wanted: Have two 3AP1, two 5CP1, brand new. Will trade for 2AP1, 5BP5 or 913. Rex Byle, 3415 N. Oakland Ave., Milwaukee 11, Wis.

BEST offer: Fifteen 450TH Eimac tubes. In original factory cartons. W2AIW, Charles W. Rogers, Curtis & Union Aves., Manasquan, N. J.

QSLS? SWLS? Modernistic? Cartoons? Moblie? Photographic? QSL samples, 10¢ (large variety). Sakkers, W8DED, Holland, Mich.

TRADE only: Typewriter, other items, for NC-57. Local preferred. Samkofsky, 327 Bedford Ave., Brooklyn, N. Y.

BARGAINS: new and used transmitters, receivers, parts: Globe-King, $315.00; HT9, $199.00; HRO7, $199.00; Temco 75GA, $225.00; Collins 32RA, $125.00; Collins 75A1, $295.00; new 150-watt phone, $199.00; KP81, $189.00; HRO-5T, $175.00; Hallicrafters S-47, $119.00; RME-45 $99.00; SX-17, $89.50, NC-46, S-40A, $69.50; VHF 152A, $69.00; SX-24, $69.00; Bud VFO 21, $39.50; Globe Trotter, $57.50; New Meissner Signal Calibrators, $24.95; MB611, $29.00; 90800 exciter, $29.50; Gonset 10-11 converters, $25.00; XE-10, $14.95, and many others. Large stock of trade-ins. Free trial. Terms financed by Leo, W9GFQ. Write for catalog and best deal to World Radio Labs. Inc., 740-44 West Broadway, Council Bluffs, Iowa.

WANTED: Coil sets for HRO, Sr. Cary Rush, 3910 Dartmouth Place, Philadelphia 36, Penna.

WANTED: TCS-12, RA-34, TS-13, APR-34, BC-348, BC-221, BC-654A, PE-103A, PE-104A. Arrow Appliance, 523 Union, Lynn, Mass.

SELL Globe Champion transmitter, 150 W 80-40-10 18 mo. old. $200 or best offer. W9REQ, RR 1, Chippewa Falls, Wis.

NEW: Globe King 400A, press-to-talk, 10 and 160 coils, $475. Bud 21 VFO, $30. Custom-built all band 813 Kw. Millen exciter, clamper modulation, $400. Collins 75A-1 factory checked, $290. Consider trade for outboard boat and motor, new car, or what have you. Want Panadapter. Hinnant, W4RJ, 406 So. Franklin, Whiteville, N. C.

WANTED: NC57 receiver. Will trade complete CIRE master radio communications course; Fox Sterlingworth double barrel 12 ga. shotgun (in excellent condition); Remington Sportsmaster .22 caliber prewar, excellent. Shotgun even trade; others plus cash. Graves Taylor, Tryon, North Carolina.

FOR Sale: One National HRO-7T with earphones and power supply. $200.00. W8OIC, New Haven, West Virginia.

WANTED: Gonset Tri-band. Trade or sell like new RME HF-10-20. $55. Also, S-38, $35, and G-E Pyranol 50 μfd. at $4 or trade for what have you? W4BBL.

WANTED: Collins exciter 310B-1, 310B-3, or 70E-8A. Maximum cash for perfectly operating unit. William A. Bryan, W6BCG, 569 So. Arizona Ave., Los Angeles 22, Calif.

QSL, SWL cards. Samples, prices on request. Printing Products, 412 Court Street, Jackson, Mississippi.

QSLS, very attractive. Best in printing and prices. Kromkote or any other stocks. Send stamp for samples. Roop, W4LXJ Press, Radford, Va.

CONVENTION Notice! ARRL West Gulf Division Convention in Austin, Texas, August 18th and 19th, 1951. The Convention Committee is planning a great program with fun for the whole family! Plan for a great time in Austin in August! For general information, write: Austin Amateur Radio Club, Box 1716, University Station, Austin, Texas.

I would like to learn code and theory with someone. Prefer an exp. (local) ham. What say, fellas? Joe Z., 2227 Gtn. Ave., Phila. PH-ST 2-2176.

TELETYPE equipment wanted. AN-FGC-1 terminal unit and tech manual, or parts of same. Model 14 tape transmitting distributor, righthand side frame casting for model 15 teletype, exciter unit 0-5/FR, facsimile set AN-TXC-1 power supply and parts, tech manuals of all kinds on electronics equipment. Will buy, swap or trade. Chas. Patrick, 402 North Lucia, Redondo Beach, Calif.

WANTED: Modulation transformer for kilowatt. Will trade Q5'er and BC-459 or will buy. W9JQQ, 24 Forest Blvd., Park Forest, Ill.

BANTAM transmitter manual, $1.00. W4BIW, Box 3281, Station F., Atlanta, Ga.

VX-101, jr. VFO with 807 final 20, 40, 80 meter bands, built-in power supply NBFM, $45. G.I. 78 RPM recorder and playback turntable, $10.00; NC-57, $75.00. All items perfect. Ralph Cabanillas, 355 W. 84 St., New York City, N. Y.

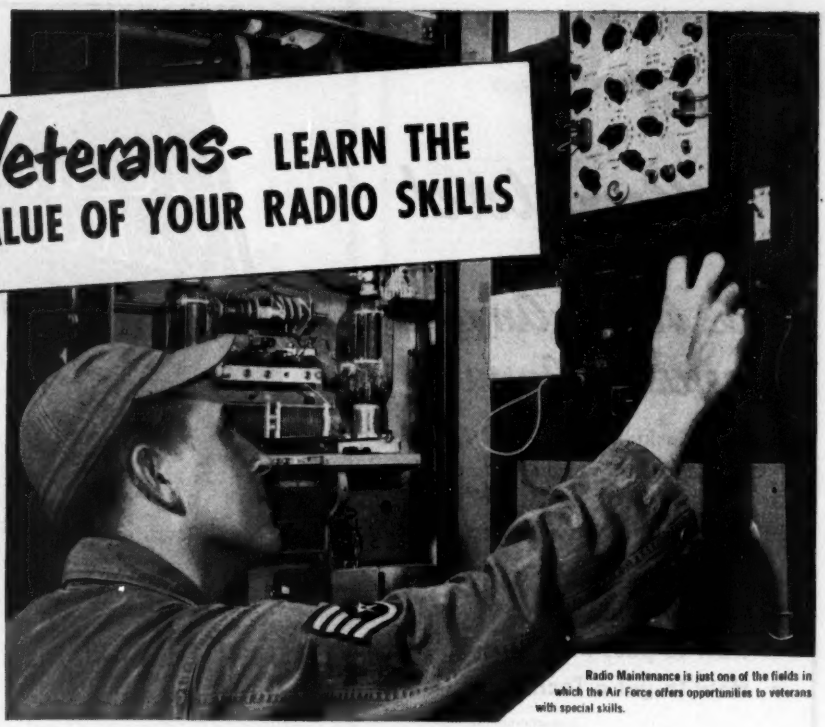
SX-42 and R-42 speaker purchased Xmas 1950, $175. Trade for xmitter or ham gear, a 15½ ft. freezer recently reconditioned, cost $586. Ideal for farm or large family. Freezer must be picked up in Columbus. Have ready cash for a complete ham station. Blum, 2661 Dhiblee Ave., Columbus 4, Ohio.

WILL trade VHF-152 perfect condx for RME HF 10-20 same condx. W7NWU, Gabbs, Nevada.

SELL: SA-2 radar complete. Dumont #241 'scope, TCS-12 equipment, SCR-284, RA-34. Also: BC-654 portable transmitter-receiver with PE-104, PE-103, GN-45 TCS and power supplies. TBL-13 transmitter. TBV and technical manuals. LM-8 frequency meter, a.c. power supply. DU-1 direction finder. T. Clark Howard, 46 Mt. Vernon St., Boston 8, Mass. W1AFN, Richmond 2-0916.

Index of Advertisers

Veterans- LEARN THE VALUE OF YOUR RADIO SKILLS



Radio Maintenance is just one of the fields in which the Air Force offers opportunities to veterans with special skills.

Here's why so many veterans with training in Radio and Electronics have been moving into the Air Force

Today's fast-growing Air Force offers better pay and more chances for rapid advancement than ever before. If you're a qualified technician, you can enlist now with your old grade or better, according to your present ability. And, the Air Force will tell you before you enlist what your rating will be. Initial duty assignment for veterans will be to a nearby Air Force Base, and you'll skip basic training, of course. If you're experienced in radio or electronics, find out *now* what the Air Force has to offer you by mailing this coupon.

U. S. AIR FORCE

HEADQUARTERS, U. S. Air Force
Washington 25, D. C.
Attn: AFPTR-Department 5

Please tell me how I, as a veteran, can get an Air Force rating in keeping with my skill and experience in radio and/or electronics.

*NAME*_____

*ADDRESS*_____

*CITY*_____ *ZONE*____ *STATE*_____

RECRUITING U.S. ARMY U.S. AIR FORCE

MAIL THIS COUPON TODAY!

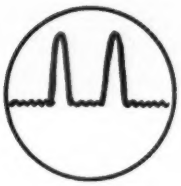
PRINTED IN U.S.A.
RUMFORD PRESS
CONCORD, N. H.

The news hundreds have been waiting months to hear!

$383.50 *
(less spkr)

NOW AVAILABLE FOR IMMEDIATE DELIVERY

the new HRO-50T1 with 12 permeability-tuned I. F. circuits!



Input to I.F. Section

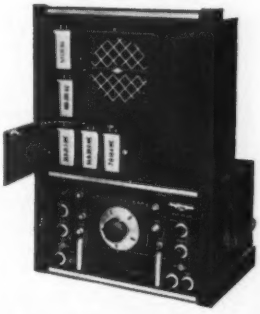
Now, at last, the receiver you've been waiting for is waiting for you at your dealer's. It's the new HRO-50T1, featuring, beside all the improvements developed in 17 years of building HRO's, the highest degree of "skirt" selectivity ever achieved in a general communication receiver! Don't wait another day to see and hear National's finest!

Output of good I.F. Section (down 20db)

Output of HRO-50T1 I.F. Section (down 60db *without using crystal filter!*)

Desired signal

Interfering signal only 5kcs. away



Deluxe rack model of the HRO-50T1 with coil compartment and built-in speaker in one complete unit.

*Price slightly higher west of the Rockies.

RCA publications every amateur should have

Newcomers and Oldtimers alike can count on the authoritative RCA Tube Publications to keep them up-to-date . . . just as they can count on the quality of RCA Tubes to keep them on the air.

RCA Ham Tips is issued every other month, and contains dope on tube applications, new circuits, and new equipment designs, that you can put to practical everyday use. It's free . . . and you can get your copy from the nearest RCA Tube Distributor.

RCA Headliners for Hams is a storehouse of information on the ratings and operating conditions of RCA transmitting-type tubes . . . so arranged that you can easily choose the tubes for a rig for any power and any frequency band. It's yours for the asking through any RCA Tube Distributor.

RCA Tube Instruction Booklets provide design and application data on non-receiving tube types. Single copy is available free of charge through your RCA Tube Distributor, or from RCA, Commercial Engineering, Harrison, N. J. Be sure to mention tube type booklet desired.

RCA RC-16 Receiving Tube Manual gives technical data on more than 460 RCA receiving tubes and kinescopes . . . including classification charts, operating data, and socket connections. Contains over 300 pages. Only 50 cents at your RCA Tube Distributor.

Put these authoritative, up-to-date RCA Publications to work for you . . . and follow up by using genuine RCA quality tubes in the familiar red-black-and-white cartons.

RADIO CORPORATION of AMERICA

ELECTRON TUBES — **HARRISON, N. J.**